

ECONOMICS

W. S. SMITH



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ECONOMICS

A Text Book

FOR THE USE OF

HIGH SCHOOLS, COLLEGES
AND UNIVERSITIES

WRITTEN BY

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INTRODUCTION

The old adage was:—"That man is the architect of his own fortune." Today, humanity is dragged down by unseen and in many cases, unknown forces. The object of this book is to discuss these forces so that people may have a better understanding of the conditions that surround them, in their every day life.

The Author W. S. S.



PART I.
NATURAL CONDITIONS

CHAPTER ONE.

NATURAL LAWS.

Definition :—Economics is the condition of procuring the greatest returns with the least expenditure of time, energy, material or finance.

The world can be divided into three great divisions or fields. First, the division or field where nature is all powerful. Second, the division or field where man and nature works together. Third, the division or field where man works independently of nature. A simple illustration of the division where nature is all powerful is the weather. Humanity is constantly affected more or less by the weather, yet no person can control the weather. A simple illustration of the division or field where humanity and nature work to-

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gether is the steam engine. Humanity makes the engine and nature furnishes the force to drive the engine. A simple illustration of the division or field where humanity works independently of nature is governments or war. Humanity may have strong or weak governments; much government or no government. The people, in one part of the world, may try to kill the people in another part of the world by calling it war, or all the people may live together in harmony. From observation we see that nature makes no interference in these workings of humanity.

In our present study we will consider the natural conditions over which humanity has no control, as Natural Conditions; the conditions where man and nature work together as engineering conditions; the condition where man, and not nature, controls as sociological

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conditions. Since Economics is to treat of the natural conditions, the first step will be the study of natural conditions. In this study of natural conditions we will bring to our aid the use of mathematics. First we will use Geometry.

Taking a plane surface. Beginning with a point and expanding symmetrically over a surface gives the circle. The area of this figure is determined with one dimension, the radius or its double, the diameter, together with a constant. Pass two lines through the point and complete the figure with parallel lines gives the square or parallelogram. The area of this figure is determined by using two dimensions, the length and the breadth. Connecting two adjacent sides of the square or parallelogram with a third side gives the triangle. The area of this figure is determined

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by using the base and half the altitude. The altitude of a triangle is determined by calling a portion of the base M. the leg of the triangle R. and the hypothenuse of the triangle A. This gives the equation $A^2 - R^2 = M^2$, thus using three dimensions. The triangle reduces to a polygon. The area of this figure is determined by using the perimeter of the base and one-half the radius of the inscribed circle. Using the method explained for determining the altitude of the triangle, to determine the radius of the inscribed circle, and combining these three dimensions with the perimeter, gives the four dimensions necessary to calculate the area of the polygon. Likewise the polygon can be developed directly from the square or parallelogram. Increasing the number of sides of the polygon indefinitely, the limit is the circumference of

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a circle. Decreasing the radius and perimeter of the circle to its limit gives a point, thus completing the cycle.

Taking the solids. Take a point and expand symmetrically in every direction gives the sphere. The volume of this solid is determined by one dimension, the radius or its double, the diameter, together with a constant. By truncating the sphere a cylinder may be formed. The volume of this solid is determined by two dimensions, the radius, or its double, the diameter, times the altitude together with a constant. Pass four parallel intersecting planes through the cylinder gives the cube or parallelopiped. The volume of this solid is determined by using the three dimensions, length, breadth and altitude. Connecting two adjacent planes of the cube or parallelopiped with a third plane gives

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the prism. The volume of this solid is the area of the base times the altitude. As previously explained the base being a triangle requires three dimensions to determine its area. Combining these three dimensions with the altitude gives four dimensions. The prism can be reduced to a triangular pyramid. The volume of this solid is the area of the base times one third the altitude. This solid has six dimensions, both the altitude of the pyramid and the altitude of the base forming separate triangles. The triangular pyramid reduces to a pyramid with a polygonal base. But, this in turn has but six dimensions as the radius of the inscribed circle occurs in the polygon and again in the altitude. The cube or parallelopiped can be changed directly into a pyramid with a rectangular base. To determine the volume of this solid requires five dimensions.

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Two dimensions to determine the area of the base and three dimensions to determine the altitude. A pyramid with a rectangular base changes readily into a pyramid with a polygonal base. This solid has six dimensions as previously explained. A pyramid with a polygonal base reduces readily to a cone, a solid with three dimensions. The radius or diameter of the base, the altitude and the slant height. By truncating the cone, a cylinder may be produced. The volume of this solid is formed by using two dimensions as previously explained. The cylinder reduces to a sphere, or solid of but one dimension. Reducing the radius and surface of a sphere to its limit gives a point, thus completing the cycle.

If followed through the triangle, the law shows the plane figures increasing continu-

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ally from a figure, the circle, having but one dimension, to a figure, the polygon, having four dimensions. If the law is followed directly through the square or parallelogram to the polygon, no figure is produced having three dimensions.

In the solids, the law follows continuously to the prism, a solid having four dimensions. If the prism is changed to a triangular pyramid, and the triangular pyramid is changed to a polyagonal pyramid, no solid is produced having five dimensions, but two solids are produced having six dimensions. If the cube or parallelopiped is reduced to a pyramid, no solid is produced having four dimensions. The law passes from a solid of three dimensions to a solid of five dimensions and then to a solid of six dimensions. After reaching a solid of six dimensions, the polyagonal pyra-

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mids, the law drops directly to a solid, the cone, having but three dimensions. The law then reduces directly through the cylinder, a solid with two dimensions, to a sphere, a solid with but one dimension.

Thus with the aid of mathematics, we see that the laws of nature do not develop uniformly in all cases. Call each dimension a function. In both the plane and solid figures, the law branches and reaches the same limit by two routes. After passing its limit, both the plane and solid figures lose three functions. While we may not be able to locate just where the change takes place, at some point the polygon ceases to be a polygon and becomes a circle. In the same manner the pyramid ceases to be a pyramid and becomes a cone. Whenever that change takes place, the figures cease to exist in their former state.

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As we proceed with our study, we will find other laws of nature that are affected in a similar manner.

DIFFERENT NATURAL LAWS.

Plants remain permanently in one place during the term of their natural lives while animals roam from place to place. Hence, the vegetable kingdom affords the better opportunities for the study of natural laws. In the vegetable kingdom any person can easily observe three conditions. First, the condition where the seed matures, but the stem dies and the root dies., This condition is readily seen by observing the grains, wheat, rye, corn, etc. Second, the condition where the seed matures, the stem dies, but the root lives. This condition is readily seen by observ-

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ing the grasses, clover, timothy, blue grass, etc. Third, the condition where the seed matures, but the stem lives and the root lives. This condition is readily seen by observing the trees, oak, chestnut, beech, hickory, etc.

As yet we are unable to prove why a grain of wheat will not grow into an oak tree or why an acorn will not grow into a stalk of wheat. At the present time we are compelled to accept these facts as axioms. The facts show conclusively that the laws of nature are different. That is, the results of nature, that we see around us, are produced by the workings of different natural laws. Hence, we would not be justified in trying to harmonize all natural phenomenon as being produced by one great natural law.

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VARYING NATURAL LAWS.

We may see men laying one brick upon another brick, thus producing a wall. Or reversing the process, taking away brick after brick will destroy the wall. Another condition, not so easily observed, is the placing of one force against another force to produce the balance. A fine illustration of this principle is the working of a pair of scales.

These three observations give us the three great principles of mathematics, namely, building up; tearing down; and the balance. Building up is represented by addition and multiplication. Tearing down is represented by subtraction and division; the balance being represented by the equation in Algebra. In ordinary business transactions, quantities are considered as fixed. The grocer's pound, the

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steelman's ton and the engineer's foot, are all definite fixed quantities. Let us consider a railroad train as passing from a point A. to a point B. The distance from A. to B. remains constant, but while the train is in motion, the distance of the train from either A or B is constantly varying.

Quite recently mathematicians have discovered that there are two kinds of varying quantities. The sides of a triangle vary but the ratio of variation is constant. This gives us the tables of Trigonometric functions used by engineers and architects. The second kind of varying quantities seem to be more perplexing and more difficult to comprehend; that, in which the quantities vary and the ratio varies. So difficult to comprehend and so perplexing are the workings of this varying quantity, that for the present, we will content ourselves

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by merely proving that such a condition really exists. As an illustration of this varying condition we will consider a young lady, aged twenty, who contemplates marrying a man aged forty. The young lady demurs and a sympathetic friend takes her to task. The young lady says, "To tell the truth he is too old." "But," says the friend, "he is only twice as old as you are." "That," says the young lady, "is just what is worrying me, for when I am forty he will be eighty." A moment's consideration will show us the fallacy of the young lady's arithmetic.

For the sake of argument, let us consider that they marry. When the wife is one second old the ratio of their ages is one to 631,065,600. When the wife is one hour old the ratio of their ages is one to 175,296. When the wife is one day old, the ratio of their ages

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is one to 7304. When the wife is one year old, the husband is twenty-one years old and the ratio of their ages is one to twenty-one. When the wife is five years old, the husband is twenty-five years old and the ratio of their ages is one to five. When the wife is ten years old, the husband is thirty years old and the ratio of their ages is one to three. When the wife is twenty years old the husband is forty years old and the ratio of their ages is one to two.

By increasing their ages indefinitely, the ratio between their ages can be made less than any assigned quantity, however small, but the ratio can never become zero, since the difference in their ages is always twenty years. This condition gives us an idea of the differential of calculus.

From what has preceded we are able to

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draw three conclusions. First, the laws of nature branch and may overlap each other. Second, the laws of nature are different. Third, the laws of nature vary.

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CHAPTER II.

ECONOMIC LAWS.

In order to supply the various needs of the human race, supplies are drawn from the mineral, the animal and the vegetable kingdoms. In many cases, the conditions are so closely interwoven that it is a difficult task to distinguish where one condition ends and another condition begins. In its broader sense all operations will come under either one of three general divisions. Either, the material is used as nature produces it. One kind of material is transformed into another kind of material, or, certain kinds of material are used to produce certain other kinds of material.

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First, the material is used just as nature furnishes it. Under this condition we are only allowed to use the amount of material that nature furnishes. In the case of minerals, we may mine and use them until the supply is exhausted. After the supply is exhausted all mining operations and likewise all using operations must cease. The same conditions apply to any article that we may possess whether it be food supplies, building material, finances or any other article. We can only use of that article until the supply is exhausted. This condition gives us our first Economic Law which we will designate as the Economic Law of Material or the Economic Law of Decreasing Returns.

In the second condition, we may possess an article and wish to transform that article into some other article. As an illustration, the

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farmer may have grain and hay which he transforms into pork, beef or mutton. The mechanic may transform coal into steam or transform a water fall into electricity. The financier may transform money into roads, cities, factories, etc. This condition gives us our second Economic Law, which we will designate as The Economic Law of Transformation or the Economic Law of Constant Returns.

In the third condition, we may desire articles that nature will not produce unless assisted by man. We desire grain for food and in order to procure grain man must prepare the soil and sow the seed. We desire steel for building material and in order to procure steel man must place together, in a heated furnace, iron ore, coal or coke, limestone, etc. This condition gives us our third Economic Law

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which we will designate as the Economic Law of Production or the Economic Law of Increasing Returns.

In our every day lives, we see some people constantly engaged in tilling the soil; other people constantly engaged in building operations; other people constantly engaged in financial operations; and still other people constantly engaged in intellectual work. If we try to harmonize these various conditions into one great natural law, we simply end in confusion.

Probably the one condition that has puzzled economists of the past, more than anything else, is the fact that in economics two sets of natural laws cross each other at right angles. One set of laws splits into four branches which we will designate as Natural, Commercial, Financial and Intellectual. These four branches are crossed at right angles by three Economic

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Laws. The Law of Material or the Law of Decreasing Returns; the Law of Transformation or the Law of Constant Returns; and the Law of Production or the Law of Increasing Returns.

To complicate matters still more the laws overlap in the professions. A successful farmer must be a fairly good doctor because he is constantly called upon to care for the very young and give first aid to the injured. A successful doctor must be an expert farmer because he is constantly called upon to prescribe special foods for his patients and he must know whether or not his patients are getting the food he prescribes. An engineer must be a good financier. He must not only be able to design and superintend the erection of difficult engineering structures but he must know, in advance, about how much these

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structures will cost and about how much they will earn when the project is put in operation. A financier must be a good engineer to know whether or not it is safe to invest in certain projects. Lawyers and ministers are brought into contact with all phases of life and business. In many cases a business will overlap. That is, some transactions will occur in one economic section while other transactions will occur in a different economic section. In order to properly classify a business transaction, economically, it is necessary to consider the element of time.

In the Economic Law of Material or the Economic Law of Decreasing Returns, the element of time has no effect upon the transaction. Johnnie may eat all his cake today, or, he may save part of it until tomorrow. As far as natural laws are concerned a person may

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hunt or fish at any time. As far as the ditch is concerned, a laborer may dig it today, tomorrow, next day or next year. As far as the letter is concerned it may be written in the forenoon or the afternoon. The letter can be advanced or delayed to conform to the desires of the writer. In any of these transactions the element of time does not affect the final result or the finished product.

In the second Economic Law, the Law of Transformation or the Law of Constant Returns, the element of time is either periodical or intermittent. The stock-raiser collects the products of his flocks and herds at certain periods of the day or certain seasons of the year. The machine runner either runs his machine according to a schedule or for certain periods each day. The merchant and banker conduct their business only during certain

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hours of the day, while the teacher is only employed for certain hours of the day on certain days of the week and during certain seasons of the year.

In the Economic Law of Production or the Economic Law of Increasing Returns, the element of time is continuous. The farmer's crop occupies the land continuously from the time the crop is planted until the time the crop is harvested. The Architect's building occupies the land continuously from the time the building is erected until the building is taken down or destroyed. The investment of the financier is continuous from the time the first payment is made until the entire transaction is settled. In finances, a note never takes a vacation, and a mortgage never sleeps. In all of these transactions the element of time is continuous, never relaxing for a second.

ECONOMIC TABLE.

ECONOMIC LENS.

Lawyers.	Glass Companies			
Doctors	Steel. "			
Ministers	Engineers			
Barbers	Architects.			
Financiers		Farmers.		<u>LAW OF INCREASING RETURNS</u>
				OR
Teachers				<u>LAW OF PRODUCTION</u> .
Musicians				
News Paper				
Magazines.				
Students				
Clerks.				
Bookkeepers				
Stenographers.				
Guards				
Messengers.				
Third Class Workmen	Hatters.			
Unskilled Workmen	Pistermes.			
Mining Companies				<u>LAW OF DECREASING RETURNS</u>
				OR
				<u>LAW OF MATERIALS.</u>

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CHAPTER III.

PRODUCTION.

In nature we find three methods of production. Nature collects and stores her surplus products as has been done in producing the coal, oil and gas fields. Nature produces by transforming one product into another product as is done by the farmer when he applies fertilizer to the soil in order to produce the desired crops. Or, nature produces by means of increasing. That is, a grain of corn is placed in the soil and nature increases that grain of corn to an ear of corn.

Man, in his various occupations, has followed practically the same three methods. He stores certain parts of his production, at least temporarily, in warehouses or elevators. He

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transforms the wool or cotton into cloth and the cloth into clothing. Or, he places together certain articles to produce a desired product as is done in the manufacture of steel and glass.

Probably the first condition that needs to be considered in production is the difference between discovery and invention. Discovery and invention mark the boundary line between nature and man. Some one discovered the circle. Some one invented the process of dividing the circle into degrees, minutes and seconds of arc. In the Law of Decreasing Returns or the Law of Material, production has always been maintained or increased through the medium of discovery. Some one discovered that coal will burn and the using of coal began. Some one discovered that wheat will sustain life and the cultivation of wheat

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began. The same conditions hold true for all natural products.

In the second Economic Law, the Law of Constant Returns, or the Law of Transformation we find both discovery and invention. Some one discovered wool and cotton and some one invented the process of spinning these articles into yarn and weaving the yarn into cloth. Observation shows that in the law of Transformation, production may be as simple as melting snow to produce water or as difficult and complex as separating the different elements from oil or carving marble to produce statuary.

In some cases production proceeds by a succession of steps. The finished product of one series being the raw material of the following series. As an illustration, wheat is the finished product of the farmer but the

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raw material of the miller. Flour is the finished product of the miller but the raw material of the baker. While bread is the finished product of the baker but the raw material of the housekeeper.

In the third law, the Law of Increasing Returns, we find production carried on entirely by means of invention. When some one discovered that wheat will sustain life, the farmer was compelled to avail himself of many inventions before bread became a commercial article of food.

The discovery that steam will lift the lid on a kettle of boiling water led to the invention of the steam engine. By means of the steam engine heat could be turned into power and this led to many other inventions. Corporations were formed and production began on a large scale. Economically, the workings

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of corporations are similar to the workings of individuals as will be seen by referring to the Economic Table.

RISK.

Nature clothes a portion of the earth with a forest. Lightning starts a fire in the forest and the fire consumes the forest. Whether this condition could be termed an accident, a risk, or is part of a preconceived plan of nature, we have no way of proving. In other words we are unable to prove whether or not nature assumes any risk in her own workings.

In man's workings with nature, nature requires man to assume risk. When he shoots at game, the hunter risks the charge for his weapon. The farmer risks his labor in preparing the soil and the necessary seed to plant the soil, every time he plants a crop. In many

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cases the manufacturer must risk the value of his raw material, fuel, and necessary labor in order to secure a desired product. Likewise, the financier is called upon to assume many and various kinds of risks. The time during which a risk exists, varies. In the case of the hunter, he knows in a very few seconds whether he has captured his game or wasted his ammunition. In the case of the farmer, the risk is from seed time to harvest, which may be any where from three months to ten months. With the aid of intelligence, care and experience, the element of risk may be reduced to such a point as to be practically negligible from an economic standpoint. However, we must not lose sight of the fact that in all classes of production risk is an element that at any time may prove to be a serious factor.

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COMPETITION.

The weed that man has tried to destroy, springs up and destroys the plant that man has tried to cultivate. Whether or not, this is a survival of the fittest, from an economical stand point, it is certainly not the survival of the most valuable. However, it does illustrate competition.

By referring to the Economic Table we see that all industries are not governed by the same Economic Law. It depends very largely on which Economic Law governs an industry as to how competition will affect that industry. Where nature makes no charge for the product, as in the Law of Decreasing Returns, competition does promote more scientific methods in production and does decrease prices. In the case of mining Companies, competition does stimulate production and

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does reduce prices. As an illustration, take a coal field in which fifty different companies are operating. In this case the price of coal is always set by the consumer. The consumer will purchase from the Company that sells coal for the least price. Economically, this price represents the cost of producing coal under the most adverse circumstances. Hence, any competing company who wants a profit will be compelled to gain this profit by improved methods in mining.

Companies whose operations come under the second Economic Law, that of Constant Returns are invariably controlled by outside forces. Economically, railroads are controlled by the shippers. Hence, competition tends to decrease the revenue of the railroad. That is, the shipper, invariably, will patronize the railroad that will haul his goods for the least

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money. If the revenue of the railroad is decreased by competition or any other method, until there is not sufficient to pay running expenses and keep the equipment in running order the road will be forced out of business.

In the Economic Law of Increasing Returns, economically, the price of the product is set by the producer. If the producer is hindered in his work by competition it will, necessarily, increase the price of the product. Since competition increases the price of the product to the producer, competition likewise increases the price of the product to the consumer. That is, the steelman puts together certain products found in nature and nature charges him a certain price for these products. If man interferes with nature's work, nature charges man for the interference and man must pay the bill. Industries, operating under

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the law of Increasing Returns, cannot be controlled by competition. These industries must be controlled by some other method.

In the field of production, we are constantly called upon to deal with the problems of equipment, power, disposing of valuable by-products, etc. Each separate plant develops its own set of detail problems. Since these problems are different for each plant it seems better to leave the solution of these problems to the Superintendent or Manager.

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CHAPTER IV.

DISTRIBUTION.

Nature's forces for distribution are the winds, the streams and the waves of the ocean. For many centuries man availed himself of practically the same forces. The streams carried his rafts and canoes while the winds blew his boats across the ocean. With the invention of the railroad and the steam ship, the world was brought under the sway of mechanical transportation. With the more rapid facilities afforded by mechanical transportation great changes have been brought about in the methods of distribution. On a modern breakfast table, we may find codfish from New Foundland, oranges and bananas

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from the tropics, tea from China, or coffee from Brazil. This shows, conclusively, that the producer and consumer may live in different parts of the earth or many miles apart. Such being the case, it is only in rare or exceptional cases, that the producer and consumer deal directly with each other. Between the producer and consumer has grown the merchant.

Under present business conditions, the merchant buys and sells. This condition places the merchant in a peculiar economic situation. The merchant sells exactly the same goods that he buys. In an Economic sense, he neither consumes nor produces. This condition places his business in the Economic Law of Transformation or the Economic Law of Constant Returns. But, in his purchases the merchant is not able to avail himself of the

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Economic Law of Transformation but must be governed by the Economic Law of Production. That is, in his purchases, the merchant has no guarantee that he will ever be able to sell any part of the goods he purchases. Hence, the risk that the merchant must assume, in many cases, is the total amount of his purchase. The merchant is likewise exposed to competition. He is constantly called upon to expose his wares for sale, yet the only protection the merchant has is the protection he provides for himself. The result of this method of doing business is:—that the merchant dominates the entire commercial situation. The merchant sets the price for the Producer; he sets the price for the Consumer; and he sets the amount of his own profit. To substantiate this statement, when the merchant buys an article the price paid must

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suit the merchant, otherwise the merchant will not buy the article. When the merchant sells an article, the selling price must suit the merchant, otherwise the merchant will not sell the article. The profit, on an article, represents the difference between the cost price and the selling price. Since the merchant fixes both the cost price and the selling price, he at the same time fixes his own profit.

This method of doing business is unfair to every one. It is unfair to the producer, for he has nothing to say in regard to the value of his produce. The method is unfair to the merchant on account of the risk he is called upon to assume. When a merchant buys goods, he has no guarantee that he will ever be able to sell these goods to any person, at any price. The method is unfair to the consumer for it does not allow the consumer to

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use any intelligence with regard to his purchases. With the consumer it is simply a case of; pay the merchant's price and take the article; or, refuse to pay the merchant's price and leave the article. Under existing conditions this is probably the best arrangement that can be made. The question is how to change the conditions?

The farmer, the merchant, the manufacturer and various other people are taxed to maintain the public schools. The public Schools are maintained, exclusively, for educating the rising generation. Is it not a fair equation, that since the public has assisted the child to an education, the public has the right to require the child to use that education in order to determine its own wants? Instead of the public going to the store and seeing what they can get and what the merchant has, how

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would it be for the public to go to the store and tell the merchant what they want?

With such an arrangement, what would be the order of business? It would be necessary for the consumer to place orders at least a week, in advance. The merchant having his orders could employ his help to a better advantage. Under the present arrangement the merchant must have sufficient help to take care of his business during his busiest period; at other times there is little that this help can do. If he has his orders, in advance, he can employ his force continuously until his orders are filled. If he works on a commission, he need have none of his own capital invested, consequently he assumes no risk, and has no interest to pay on capital that is not working. If he simply buys and sells his business controls him. He may not be able to sell when

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his business demands that he should sell. If he acts as a commission man, he simply orders from the producer the amount the consumer orders from him, consequently he controls his business.

With the producer, the commission form of business renders production more flexible. The producer may devote special efforts to producing certain kinds of goods or a commission man secure markets for goods that a merchant would refuse to buy. In buying and selling, either perishable or non-perishable goods, the merchant must assume a tremendous financial risk. In the case of perishable goods, the goods soon become unfit for use and may mean a total loss, financially. In the case of non-perishable goods, if the dry goods merchant turns his entire capital once every one hundred days then each day he

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turns one percent of his capital. Hence, the profit, on one percent of his investment must be sufficient to pay his entire daily expenses and the interest on ninety-nine percent of his capital that is lying idle. If his customers order in advance and he simply fills their orders he need have no fixed capital invested, consequently he has no interest to pay.

In buying and selling the merchant does all the advertising. In a commission form of business, it would not be necessary for the commission man to do any advertising. The advertising would all be done by the producer and the consumer. In a commission form of business, undoubtedly it would be necessary to place the commission man under bond and perhaps require him to secure a government license.

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CHAPTER V.

CONSUMPTION.

Distribution and consumption are so closely allied as to be almost inseparable. While giving, trading, buying and selling might be considered as a part of distribution, we will consider these conditions as a part of consumption. When the savage hunter succeeded in slaying a large animal, especially during the warm season, personally he could only consume a small portion of the animal before the flesh of the animal became unfit for use. In order that game, which constituted their main food supply, might not become scarce, the savages gave, to each other, such supplies as they could not use for themselves. That is,

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to the savage, giving was an economic necessity. When man domesticated the animals, different men reared different species of animals; consequently they could give or they could trade. That is, if A. had horses and B. had cattle they could trade so many horses for so many cattle.

With the inventions of governments, came the invention of a medium of exchange that we know as money. Then man began legalized trading and finally buying and selling. That is, if A. had horses and B. had cattle and they wished to exchange, A. would place a cash valuation on his horses and B. would place a cash valuation on his cattle. The exchange then became a simple arithmetical calculation. Or, using the same valuation, A. could sell to B. or B. could sell to A. for a cash consideration.

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This exchanging of products became the field of the merchant and for an indefinite period of time, the merchant has been conducting a small business in legalized trading. When power began to be applied to manufacturing, the merchant began to buy and sell on an extensive scale. On account of the conditions that surrounded him, the merchant was compelled to guess what his customers wanted and buy accordingly. If he made a good guess, he had a prosperous business. If he made a poor guess he had his goods on his hands.

This method of doing business has always resulted in tremendous financial losses. If the goods were perishable, the loss was in goods that had become unfit for use and had to be destroyed. If the goods were non-perishable, the loss was in goods that could

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not be sold. Capital invested is lying idle, hence at all times the merchant bears a tremendous loss from interest on idle capital.

The merchant, of the old school, was not able to cope with this situation. He worked for nothing, then paid for the privilege of working and finally failed. The modern merchant has met this condition by placing an exorbitant profit on his goods and compelling the consumer to pay this profit. The result is, that the price of necessities have risen to prohibitive prices. Among the working classes, the high cost of meat has caused serious distress. As meat passes through several stages from the producer to the consumer it will be necessary to make an economic investigation in order to discover the difficulty.

We find that the farmer rears the animals

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and prepares them for market. He turns his surplus hay, grain and other by-products of the farm, that have little commercial value for any other purpose, into cattle, hogs or sheep. Since the farmer reared and prepared these animals for market practically from the by-products of his farm, these animals have not cost the farmer very much, consequently he can afford to sell them at a reasonable price. The farmer sells his cattle, hogs or sheep to a packer who transforms them into beef, pork or mutton. For this transformation, the packer has proven to the satisfaction of every one that he realizes, on an average, a profit of about one dollar per head, which does not seem to be an exorbitant profit. The packer ships the carcasses in refrigerator cars to the various distributing points. If animals are shipped long distances on the cars, where

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they are deprived of their regular supply of food and water, the animals lose seriously in weight and the animal may contract disease. Hence, it is more economical and more sanitary to slaughter these animals close to where they are raised and ship the carcasses in refrigerator cars than it is to ship the animals alive, half way across the continent.

From the distributing points, the packer sells the meat to the retail merchants. Here we find difficulty due to the method by which the retail merchant is compelled to do business. The retail merchant is dealing with a perishable product, yet the best he can do is to guess what his customers want and buy accordingly. The result is that he must have an exorbitant profit to cover his losses. The farmer is not to blame; the packer is not to blame; nor the retail merchant is not to blame

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for the high cost of meat. The blame lies in the method in which the retail merchant is compelled to do business.

The most practical method, for reducing the present high prices, seems to be the commission form of doing business. This would necessitate some changes from the present methods of doing business. First, it would be necessary for the consumer to assist the merchant by placing all orders in advance. Second, it would be necessary, for the government, to standardize all goods according to national standards. When a merchant has filled an order with standard goods he has fulfilled his obligations to the consumer.

Before agriculture could be carried on successfully it was found necessary to divide the surface of the earth by means of lines thus confining each person to his own plot of

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ground. It might be advantageous to use similar methods with the merchant. By using a commission form, a merchant should be able to handle goods at a profit not exceeding ten per cent and get rich on it.

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CHAPTER VI.

COMPENSATION.

Referring to the Economic Table we see that different classes of people are engaged in different occupations, hence, the logical conclusion would be that they receive different compensations. The hunter and fisherman is paid with his catch. He may do much labor and receive a very scanty compensation or he may do but little labor and receive a very generous compensation. The stockraiser is paid with the products of his flocks and herds. The farmer is paid with the increase in the products of the earth. That is, the farmer plants a grain of corn and in return gets an ear of corn and a stalk of fodder. Those who work

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in the mineral kingdom are paid with the products of the mineral kingdom. That is coal producers are paid in coal; quarrymen are paid in stone; steelmen are paid in steel, etc. Those who perform useful tasks may enjoy the fruits of their labor. A shoemaker may make a pair of shoes and wear them; a baker may bake a loaf of bread and eat it; or, a carpenter may build a house and live in it. These people may perform these same tasks for others and receive wages. Professional people are paid in fees, merchants are paid in profits, financiers are paid in interest, rents, commissions, dividends or royalties, and all other classes receive salaries.

Salaries arrange themselves into three general classes. Those who are paid for what they can do or produce. Those who are paid for what they know and those who are paid

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for the patronage they can command. The wages of those engaged in the various lines of manufacturing are generally arranged according to the amount of the manufactured article the employee can produce. Salaries of office employees, teachers, etc., are generally arranged according to what they know. In special cases, wages may be arranged according to patronage. The services of a clerk in a department store, who has many wealthy friends and can induce these friends to trade with the concern, is worth more to the concern than the services of a person who has no wealthy friends. In politics, the man who can command votes may be paid a higher salary for his services than the man who simply goes to the polls and votes. In finance, the person who can bring the money or influence of his wealthy friends into a business can command

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a better salary than the person who has no wealthy friends.

In some manufacturing establishments profit sharing, with the employees, has been tried. This condition does not affect the consumer. In some cases, it may stimulate the employees to greater efforts in production. Generally, it leads to very serious differences of opinion between the management and the working forces. Opportunities may be given to the workmen to suggest different methods of operation than are being used. If the methods suggested result in decreasing the cost of production, the workmen may be given a part of the amount saved. That kind of profit sharing, is economically valuable to all parties concerned.

We find no natural or economic law governing fees. A person may blow out a match

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and save valuable property from being destroyed by fire. The value of his labor might be calculated from an economic standpoint. But, when a physician saves the life of a valuable member of society, there are so many complications that the economic value of his work could not be determined, even by applying the rules of higher mathematics.

The compensation of corporations vary according to the economic law that controls the corporation. Where nature makes no charge for the product, as in coal operations and kindred transactions, the price is set by the consumer. That is, the producer can charge no more for his product than the consumer is willing to pay or can be made to pay.

If the corporation is governed by the second economic law, where goods are simply transported from one point to another point, the

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freight rate is determined very largely by competition with other means of transportation. Economically, all transportation companies are controlled by outside forces. Economically railroads are controlled by the shippers. This brings about a peculiar situation in the operations of railroads. If the railroads are allowed to compete against each other they are apt to bring on a fight of the Kilkenny cats that will destroy the railroads. If the railroads are protected by law they are quite apt to become a monopoly.

If the corporation is controlled by the third economic law, where certain articles are put together to produce a desired product then the producer sets the price of the product. This is the condition imposed upon the steel companies and similar branches of manufacturing. The more opposition that is placed

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in the way of steel companies and similar branches of manufacturing the more the product will cost and the more the consumer will have to pay for the product.

Incomes from investments range through all the Economic Laws. These conditions will be discussed under investments.

CHAPTER VII.

VALUATION.

Probably the first step necessary in the study of valuation is to make a distinction between wealth and capital. Wealth we will understand to mean such things as flour, coal, oil, clothing, etc. Capital we will understand to mean gold, silver, bank notes, stock, bonds, mortgages, etc. From this we see that the value of wealth is determined by nature while the value of capital is determined by governments. That is, the value of flour is the length of time it will sustain life. The value of coal is the amount of heat it will produce, etc., while the value of money is in the amount of these articles that a given sum of money will

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buy. As the population of the earth increases, the necessity for wealth increases. Hence, the tendency of the value of wealth is to constantly increase. Using gold as a standard for capital, the gold mines of the earth are constantly pouring their entire product into the capital or money market. Hence, the constant tendency of capital is to decrease in value.

Since the formation of governments, the governments have maintained a standard medium of exchange which we know as money. Money has proven itself to be very satisfactory as a medium of exchange, but money has not proven itself to be satisfactory as a standard of value. In commercial transactions the value of money varies or fluctuates. Using the American dollar as an illustration. At the same period, a dollar will buy different amounts of the same grade of article in dif-

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ferent markets. Or, using different periods, a dollar will buy different amounts of the same grade of article, in the same market. Except in the measurement of money, money has proven itself to be simply a medium of exchange and not a standard of value.

This fluctuation of the value of capital is proving to be a very serious problem with the wage earner. The wage earner transforms his time, energy, talents, etc., into wealth but he receives his pay in capital. Literally, the wage-earner's head is fastened in wealth and his feet are fastened in capital. With the constant tendency of wealth and capital to separate this condition nearly stretches the life out of the wage-earner.

The wage-earner is worthy of his hire. If he produces wealth, then he is entitled to be paid in wealth or its cash equivalent. Owing

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to our economic relations, conditions that suit one class of persons will not suit other classes of persons and, generally, what one class of persons want other classes of persons do not want. Referring to the economic table we see that the ideas, desires and occupations of each class of persons remains distinctly separate except in one condition:—all people must eat in order to live. The standard article of food, in all civilized countries, is wheat bread. Wheat bread is made from wheat flour; wheat flour is made from wheat and wheat is produced from the soil.

In order to secure a standard of value, place an able bodied man on a plot of ground for a period of ten hours. Let him devote his energies to the cultivation of wheat. Whatever he can produce, that is his wages. By a careful system of calculations, it has been found that

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he will produce one and three-fourths bushels. One and three-fourths bushels of wheat, or its cash equivalent, then becomes our standard of value. It matters not, whether it is necessary to sell wheat at five cents per bushel or five dollars per bushel, ten hours of unskilled labor is always worth one and three-fourths bushels of wheat, or its cash equivalent.

The valuation of property will be treated more fully under taxation and the valuation of manufacturing plants will be treated more fully under investments.

PART II.
ENGINEERING CONDITIONS

CHAPTER VIII.

INVESTMENTS IN NATURAL PRODUCTS.

Natural Investments, we will infer, to mean investments in land and the direct products of land. Investments in land may be considered under either one of three conditions. First—what the land will yield; Second—what the land will produce; Third—what the land will earn.

Investments for what land will yield refers entirely to mineral lands. Unless the mineral occurs in large bodies, where it can be definitely located, the recovery of the mineral is more or less of a gambling proposition. A gambling proposition, we will infer is a proposition that cannot be calculated or estimated. In the gas and oil business, a small investment

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may yield large returns or a large investment may yield no returns. Considering the gambling proposition as beyond the scope of our present study, we will confine our attention to large bodies of minerals, especially coal.

Practically all coal mining is done by large corporations and the corporations gain control of the coal either by one of three methods. The first method is where the corporation leases the coal and pays the owner a royalty of so much per ton at the time of mining. No time being specified as to when the mining shall be done, nor how much coal must be mined during any particular year; stating however, that all royalties, due, must be paid at stated periods. This method permits mining to be conducted during an indefinite period. If for any reason no mining is done, no royalties are due.

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The second method is to specify the amount of royalty to be paid and the number of tons to be mined each year. Specifying that the amount of royalty stated must be paid each year even if no mining is done. The third condition is for the corporation to own the coal.

By using either the first or second methods, the corporation pays a royalty, but has no taxes or interest on investment to pay. By using the third method, the corporation pays no royalty, but has taxes and interest on investment to pay. Investments in mineral lands are absolute or closed investments. That is, they yield absolutely no return until the time of mining. At the time of mining, the profit must be equal to any previous price paid, plus the accrued interest on that price, plus taxation. Under existing conditions, minerals

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double in value once in about every ten years. As previously shown, the price of minerals is controlled by the consumer. By doubling the value every ten years, minerals soon become so valuable that they cannot be used for commercial purposes; hence the manufacturer refuses to buy. From the conditions stated it can readily be seen that investments in large acreages of high priced mineral lands may lead to serious financial difficulties.

In the second condition, where investments are made in land for what the land will produce, refers largely to agricultural pursuits. Owing to moisture or lack of moisture, three conditions have arisen in agriculture. First—where the moisture is furnished by the ordinary rain fall; Second—where the moisture is scanty or periodic; Third—where man provides moisture by artificial means.

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The first condition implies the agriculture that has been conducted in different parts of the earth for centuries. The problems involved are such as have been solved by every successful farmer. In going into a new country, that has a good climate and large annual rainfall, the prospective farmer naturally would expect to find timber for buildings and perhaps fish and game to assist in a livelihood from seed time to harvest.

DRY FARMING.

In certain portions of the earth there are areas where the climate may be good, but the rain fall is scanty or periodic. In these sections have grown up what is known as Dry Farming. In addition to the ordinary problems of sowing and harvesting, the first problem the Dry Farmer will need to consider

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is:—how to retain the scanty or periodic supply of moisture? As he is experimenting with a natural condition, that of retaining the scanty supply of moisture in the soil, he would, necessarily, have to gain his education, largely, by means of experience. This might mean expensive crop failures. In addition, the prospective Dry Farmer, going into an arid or semi-arid district, would undoubtedly find less timber for buildings and perhaps less fish and game to assist from seed time to harvest.

IRRIGATION FARMING.

Before man could till the soil of the desert, he was compelled to furnish moisture for the soil. This was accomplished by building dams and grading ditches. This calls for the work of the engineer and the capitalist. The work of the engineer includes not only the building

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of the dam, but also the location of the ditches and the grading of the land.

After the engineer's work is completed, an interesting question arises as to the control of the water supply. Every farmer, in an irrigation project is interested in the water supply. But, he is also interested in his own work and not interested in his neighbors' work.

If the water supply is controlled by interested parties, in case of accident or shortage, naturally there would be serious difficulty among the farmers. If A and B are two farmers in an irrigation project and they cannot agree among themselves, their differences will have to be settled in Court. These conditions seem to point to the logical conclusion that the person in charge of the water supply, in an irrigation project, must be a disinterested party, preferably a government official.

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Since it is only necessary to irrigate land that is naturally devoid of moisture, the prospective irrigation Farmer would find no timber on his land to assist in buildings. Since the desert is always a barren waste, he would probably find very little of anything else that would assist him from seed time to harvest.

SCIENTIFIC FARMING.

When land, that once yielded abundantly, refuses to yield, the farmer knows that some element is lacking. In order to ascertain what this element is, the farmer has called the chemist to assist him and inaugurate what is known as Scientific Farming. The Scientific Farmer may find it cheaper and more convenient to have a chemist analyze the soil for him, but in order to intelligently follow the chemists' analysis, it would seem necessary for the

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farmer also to have a working knowledge of chemistry.

SCIENTIFIC FEEDING.

Closely allied with scientific farming, is scientific feeding. Generally in feeding the farmer has one of three objects in view. Either to increase the size of the animal; to cause the animal to yield a product in the way of work, milk, eggs or wool; or, to cause the animal to increase in weight in preparation for market.

If the animal is fed with the idea of increasing its size, its food must nourish all parts of the body. Hence, the food must be a balance ration with frequent changes. After the animal has attained its growth and is fed with a view of yielding a product its ration becomes unbalanced with little if any change.

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As an illustration, if fed at regular intervals, working horses may be fed the same ration, day after day, and remain in perfect health. If the animal is fed with a view to increasing its weight for market, the ration may be unbalanced but should contain a product rich in carbon.

GROWTH.

Referring to the Economic Laws as previously explained, growth would occur in the Economic Law of Increasing Returns, or the Economic Law of Production. In youth, a certain portion of the food consumed remains as a permanent investment. That is, the animal or plant increases in size and weight. This result can only be obtained by retaining a portion of the food consumed. After the animal or plant has obtained its growth, the food consumed is simply transformed. That

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is, the animal or plant no longer increases in size or weight but its ability for doing work increases. In old age, the size or weight of the body no longer increases nor is the body capable of performing hard tasks. On the other hand, in old age there is a general tendency for the body to decrease in weight. This would seem to show that in old age life is at least partly sustained from the forces stored in youth. Hence, we see that it is the young animal or plant that needs an abundance of food if it is to properly develop.

Serious conditions may arise in after life, if a young animal or plant has been deprived of its proper amount of food or moisture.

The third condition, where investments are made in land for what the land will earn, refers principally to investments in city property. This condition will be treated under taxation.

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CHAPTER IX.

INVESTMENTS IN COMMERCIAL PRODUCTS.

Commercial Investments seem to follow very closely the Economic Laws. First, investments in material; second, investments in transportation facilities; third, investments in Manufacturing Plants. Investments in Mineral lands, as described in the preceding chapter, are practically applicable to all investments in material. That is, large sums of money invested in high priced material, if the purchaser has no definite knowledge as to when the material is to be sold, may lead into serious financial difficulties.

Investors in transportation facilities and manufacturing plants need to guard constant-

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ly against over capitalization. Over capitalization may occur in different manners or may be the effect of different causes. After all operating expenses are paid, if the net proceeds from the plant will pay the legal rate of interest on the capital invested to produce the plant, the plant will not be considered as over capitalized.

BUILDING PLANT.

The first step, in over capitalization, is the building of the plant. If the plant is built, when the cost for labor and material are abnormally high, the first cost of the plant will be abnormally high. When the cost of labor and material again sink to normal proportions, the plant may be found to be over capitalized. That is, the net proceeds from the plant may not be sufficient to pay the legal rate of inter-

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est on the capital invested to produce the plant.

CHANGE OF ALIGNMENT ON RAILROADS.

In railroads, change of alignment may cause the road to become over capitalized. Many railroads are built with the idea that at some future time expensive changes will be made in the alignment. If these changes are paid for out of the earnings of the road, the property is permanently improved. But, if these improvements are paid for by means of bond issues, the road may become over capitalized.

As an illustration, a section of road five miles in length is to be improved. That means that five miles of new track is added to the system. But, it also means that five miles of previous track has been destroyed. If this improvement is paid for from the surplus earnings of the road, the road is permanently

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improved. The road is investing its own earnings in an improvement. Whatever sum this improvement earns can be credited directly to the earning power of the road, minus the interest on the original cost of the five miles of road that was destroyed by the improvement. But, if the government is paid for by means of bond issues, the road is investing borrowed capital. Hence, the road must deduct from its earning power not only the interest on the bond issue, that was necessary to pay for the improvement, but also the interest on the first cost of the five miles of road that it was necessary to destroy in order to create the improvement.

COMPETITION.

Transportation facilities may become over capitalized by being paralleled by other trans-

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portation facilities. Steam roads may be paralleled by other steam roads or by electric roads. Or, railroads may be paralleled by steam-ship lines. In either case, the traffic is deflected until the net income is not sufficient to pay the legal rate of interest on the capital invested.

MANUFACTURING PLANTS.

In the case of manufacturing plants, inventions may cause a sudden demand for some new article. Expensive plants are built to meet this demand. In a comparatively short time the demand for the article is supplied and the plants become idle. If no other use can be found for the plant, it remains permanently idle and consequently becomes a total loss. Conditions may arise where the plant can be used for other purposes and a part, or the

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whole, of the investment saved. In other cases, it may be possible to move the plant to a new site, either in a different town or a different part of the country. In either case, a part or the whole value of the plant may be saved.

Cases very often arise where a plant may be bought by a competing firm and the plant dismantled. In that case the plant becomes a total loss. Business conditions may be such as to make such a procedure economical. There may be business enough to keep one plant in operation but not business enough to keep both plants in operation. In that case it might be more economical to dismantle one plant and recover as much as possible from the scrap.

SUPPLY AND DEMAND.

In making investments the commercial man

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is constantly called upon to cope with the condition of supply and demand. Supply and Demand is the thermometer of trade and bears about the same relation to trade that the thermometer bears to the weather. That is, supply and demand measures trade.

OVERHEAD EXPENSE.

Again, the commercial investor, is constantly called upon to cope with the condition of Overhead Expense. Overhead Expense, we will infer to mean those conditions that cannot be accurately estimated. Overhead Expense would include such conditions as deteriorations of buildings, bridges, tracks, and rolling stock on railroads. Deterioration of plant and machinery in manufacturing concerns. Deterioration of goods and store fixtures with the merchant. The conditions vary

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so widely that no general method can be used to estimate the conditions, except to deduct a certain percentage annually from the original cost of the plant. In special cases, special methods might be devised. Experience has taught that, barring accident, a locomotive can be estimated to run a certain number of miles without repair. Dividing this distance into the cost of repairing a locomotive will give, very closely, the cost per mile of running a locomotive. In all mercantile investments, overhead expense becomes a serious item. The conditions affecting mercantile investments were treated under Distribution and Consumption. It does not seem necessary to repeat them.

CHAPTER X.

FINANCIAL INVESTMENTS.

Financial Investments seem to follow three general conditions. Investments in buying articles, or ownership; investments that will give control, and investments that will yield an income. In buying an article, three conditions, again, present themselves. The article may be bought with the idea of using it. The article may be bought with the idea of, again, selling it; or, the article may be bought with the idea of exchanging it for some other article.

The article may be used until it has no further commercial value; as food that has been consumed or clothing that has been worn out.

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In such a case, the cost would be the total cost of the article. Or, the article may be used for an indefinite period and again resold. This condition would include real estate that has been used for a home but more particularly contractors' supplies. In either case the profit or loss would be first cost plus the amount earned by the article during the time of ownership, minus the selling price.

Probably no field of labor calls for a wider use of practical economics than that of handling contractors' supplies. The contractor is always bound by a time limit that is specified in the contract. Generally, the contract specifies that the contractor must pay a certain sum for each day that the work remains unfinished, after the time limit has expired. This condition is known, among contractors, as a penalty. Some contracts specify,

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that the contractor will be paid a certain sum for each day that the work is completed, before the time limit, specified in the contract, expires. This condition is known as a bonus. The penalty clause and the bonus clause, in a contract, are not always enforced although it is never safe to entirely ignore them.

ESTIMATING CONTRACTS.

The first step, we will consider is estimating the contract. As an illustration, we will use a contract for a building. In actual construction, it is always necessary to begin with the foundation and construct the building item by item until the building is completed. In estimating we use just the reverse process. As an illustration, painting is the last item in construction. Then painting is the first item to be considered in the estimate. Checking back

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item by item and noting the time required to construct each item, we finally come to the foundations. By deducting the total time required to construct the various items, from the time specified in the contract, gives the time left to construct the foundations. If this time is amply sufficient to construct the foundations, it is safe to assume that the building can be completed, in the time specified.

In estimating, certain conditions need to be taken into consideration. If the time specified is for a year or more the price of labor and the price of material may be advanced in the meantime. The distance that machinery and material must be moved and the kind of roads available; whether or not it will be necessary to construct roads in order to get machinery and material on the job; if the contract must be in operation during different

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seasons of the year it may be necessary to take atmospheric conditions into consideration. Any, or all of these conditions may occur during some stage of the work.

SUB-CONTRACTING.

In large jobs, it is quite customary for one contractor to contract for all the work and then sub-contract certain portions to other contractors. The economic conditions that govern the sub-contractor are the same as the economic conditions that govern the contractor, hence, in the discussion the sub-contractor may be ignored. Whether it is cheaper to use hand work or machine work, much or little equipment, depends entirely upon local conditions. If too many men are placed in a small territory the men get in each other's

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way, hence they cannot work to the best advantage.

CONTRACTING MACHINERY.

Contracting machinery is always subjected to hard usage, hence, the deterioration is great and parts are liable to break, at any time. To guard against this condition, all contracting machinery is made so that the parts can be replaced. In case of a breakdown, a contractor must immediately consider three conditions. His plant is idle, hence, it is not earning anything. His working force is idle and he may have to pay them. His work is not progressing, hence, in the end, it may make him liable to a penalty or at least decrease his chance of earning a bonus. In view of these losses, it is self evident, that the most economical course for a contractor, is to have duplicate parts of

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every machine on hand and a man on the job who can put those parts into place as quickly as possible.

INTERRUPTION OF WORK.

Losses due to interruption in operations, vary in direct proportion with the number of men employed. If sixty men are employed, an interruption of one minute means a total loss of one hour, for one man. If six hundred men are employed, an interruption of one minute means a total loss of ten hours, for one man. Hence, it will be readily seen, that in work where much blasting is required and a large force of men are employed, it is more economical to have the blasting done, either in the morning, before the men begin work; at noon, when the men are at dinner, or, in the evening, after the men have quit work.

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WORK DURING STORMS.

When it is necessary to conduct work during the winter months, aside from the humane feature, is it economical to continually work stock and men during cold winter storms? Under normal conditions, of clear or cloudy skies, stock and men must exert a certain amount of energy in order to perform the tasks required of them. If work is continued during a storm, they must not only exert their usual amount of energy but they must also exert an additional amount of energy to withstand the storm. The general tendency is to weaken both man and beast, so that after the storm is over, they do not exert their former energy.

Very often, contractors are called upon to pass final judgment on what may be treacher-

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ous foundation material. A good rule is this:— When in doubt, soak the material in water for twenty-four hours and note what happens.

When articles are bought, with the idea of again selling them, it brings in the condition of merchandise, which has been discussed in previous chapters. When articles are bought with the idea of exchanging them for other articles it brings in the condition of trade. This trade is very often conducted with different Races of people, in remote parts of the world. The conditions are so remote, that they will not permit of an economic discussion.

COMMISSIONS, OPTIONS, RENTS.

Investments, that are made with the idea of obtaining control, divides into two classes.

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Conditions where the control is for a defined period of time; and conditions where the control is for an undefined period of time. Control, for a defined period of time, assumes one of three forms. It may be in the form of a commission; in the form of an option; or, in the form of a rent. That is, A. may desire to buy or sell property. B. may agree to purchase property for A. or agree to find a purchaser for A.'s property. If B. is successful, A. pays B. a certain sum that is known as a commission. If B. is unsuccessful, he received no pay for his labor. A commission is a sum paid or received for the purchase or sale of property.

In the second case A. owns property that he values at Ten Thousand Dollars. For a certain specified sum paid by B., A. agrees to sell this property to B. any time within a specified

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time, for the sum of Ten Thousand Dollars. B., now has an option on A.'s property. If during the time specified B. is able to sell this property for Fifteen Thousand Dollars, B.'s portion of the selling price is Five Thousand Dollars. If B. is not able to sell the property, by the end of the time specified, the control of the property reverts back to A. and B. loses whatever sum he paid to A. That is, an option,—is a sum paid or received for the privilege of controlling the value of property, for a defined period of time. In the third case, A. owns a house and B. lives in the house. For this privilege B. pays to A. a certain defined sum for a certain defined period of time. This sum is known as a rent. Rent is a sum paid or received for the privilege of using property for a defined period of time.

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STOCK COMPANIES.

The control of property for an undefined period of time, brings in the condition of stock companies. In stock companies the stockholder becomes a part of the company and is entitled to participate in the management of the affairs of the company and to vote at the election of officers. The bondholder simply invests in the bonds of the company that bear a stated rate of interest. The bondholder does not participate in the business affairs or the management of the Company.

There is a difference in the method in which stockholders and bondholders receive their pay. After all interest on bonds and other expenses of the company have been paid, whatever surplus remains is paid to the stockholders in the form of dividends. If there is no surplus, the stockholders receive no divi-

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dends. In case the interest on bonds and the expenses of the Company are greater than the income of the Company, the stockholders may meet the deficit by paying an additional sum called an assessment, or they may allow the affairs of the company to be closed out.

The stockholders must pay the interest on the bonds even though they must borrow the money to do so. If interest on bonds is not paid the bondholders may close the affairs of the company. In foreclosure proceedings the bondholders are paid first. Whatever is left is paid to the stockholders.

Generally stock companies will come under one of three conditions. Mining companies, transportation companies, and manufacturing companies. Mining properties are only valuable so long as the mineral or metal lasts. After the mineral or metal is exhausted the

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property is worthless. Hence, all stocks and bonds of the company are worthless. Where valuable bodies of metal or mineral are encountered, small investments may yield large returns. If no metal or mineral is encountered, large investments may yield no returns.

Transportation companies remain in operation continuously for indefinite periods of time; hence their securities furnish long time investments.

Manufacturing conditions are governed more or less by local and national affairs. Hence, manufacturing securities are more or less erratic. Under certain conditions, they may yield large returns, while under other conditions, they may yield no returns. During prosperous seasons, mills may run day and night, while during panics, the mills may remain idle for indefinite periods of time.

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Many municipal improvements are made by means of bond issues. The life of the average brick pavement or terra cotta pipe sewer is about twenty years. The life of the average macadam road is about five years. Improvements that are made by means of bond issues, and the improvements wear out before the bonds mature, form a class of investments that will cause trouble for some one.

Under existing conditions, the finances are conducted largely through the banks. Since transportation companies are constantly moving, all transportation must be in cash. Unless there are adequate banking facilities at the source and mouth of navigable rivers the water transportation may be affected, to such an extent, as to affect all the industries along the river.

CHAPTER XI.

INTELLECTUAL INVESTMENTS.

Almost three thousand years ago King Solomon wrote the words:— “As a man thinketh in his heart, so is he”. If we go back to Geology, which is the history of the earth written in the rocks, we find that the fish were the first animals to appear upon the earth. Observation shows that nature placed but one requirement upon the fish:— that of procuring food. According to Geology, the next animals to appear upon the earth were the birds and four footed beasts. Observation shows that nature placed but two requirements upon these animals, that of procuring food and shelter. Horses, cattle and birds are not re-

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quired to provide clothes for themselves. According to the same rocky history, man was the last of the animal kingdom to appear upon the earth. Observation shows that nature placed three requirements upon man. In order to live man must have food; he must have shelter; and he must have clothing. Going back to Primitive man, his shelter may have been a cave in the rocks, and his food, may have been fruit from the trees. Later he clothed himself.

At this point it is necessary to note a distinct revision of mental processes. When he wanted food or shelter, the idea originated from without and he sought it. When he wanted clothing, the idea originated in his own brain and it was necessary to execute it with his hand. The dress of primitive man was undoubtedly crude. In some cases it may

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have been leaves from trees or skins from animals. Yet, it conveys the idea of invention and that man must use his brain to supply part of his needs.

If we read our history carefully, we see that for many centuries man has distinguished between the three conditions of necessities, conveniences and luxuries. Necessities, we will understand to mean the elements necessary to sustain life. Conveniences, we will understand to mean the elements that help to sustain life. Luxuries, we will understand as conditions that may be desired yet are neither necessary nor convenient.

History shows conclusively that man's occupation has always exerted a marked influence on his intellect. The true hunter becomes as shy and as diffident as the game that he seeks to capture. The school of the

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hunter, is to learn to distinguish the animal or bird from its foot print, track, or sound of its voice. His college is the mountain, the valley, the plain and the stream. His university is the universe. To the man who must procure his livelihood by means of hunting, book learning is a luxury.

When man domesticated the animals, so that it was no longer necessary for him to hunt them, in order to procure a livelihood, we find his shyness and diffidence disappearing. The semi-civilized man had more leisure and became broader in his ideas. To him, book learning was a convenience. Following our history a step farther, we see that in order to obtain a livelihood, man was compelled to enter into complicated and involved business transactions. In order to assist him in his business, book-learning became a necessity.

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A child born into the world knows no more about the conditions of the world than did primitive man. It is only by means of education that the average child ever becomes able to cope with modern conditions. Since there is much to learn and the time limited, is it economical for the student to spend years in studying languages that the world has long since discarded? Is it economical for the student to spend too much time in research work? After leaving High School, is it economical for a student to continue at school unless he has a definite aim in view? Is it economical to use mechanical calculating devices? It has been proven, that automatic machinery creates careless and incompetent workmen. Might not mechanical calculating devices create careless and incompetent business men? Many of these devices are ingen-

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ious and the results obtained are marvelous. Among engineers the slide rule is extensively used. While the slide rule is simply an ingenious plaything when placed in the hands of competent experienced men it does produce correct results.

The student will readily see that great changes have taken place in the world, and that many of these changes did not result for the betterment of humanity. These changes must be the effect of some cause. Rum was the curse of the savage hunter. It destroyed the tissue of his body so that he was no longer able to follow the game, which in many cases, constituted his only food supply. Machinery was the curse of the semi-civilized man. With the aid of machinery, the natural feeding grounds were broken up, and the stock had nothing upon which to subsist. Charity is the

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curse of the civilized man. Charity supplies many necessities that the average person should learn to supply for themselves. Hence, the brain has no chance to develop. The individual is unable to cope with the intellectual conditions of a legitimate business, hence he turns to crime and then to war. It was charity that gave the drunkard his cup, it was charity that gave the beggar his bread, it was charity that set the nations of the world at war with each other.

PART III.
SOCIAL CONDITIONS

CHAPTER XII.

GOVERNMENTS, THEIR ORIGIN AND FUNCTIONS.

Following the Economic Table, as previously outlined, we see that occupations occurring in the different economic laws produce different intellectual developments. While the *school* of the hunter consisted in being able to distinguish the animal by means of its foot print or track, the *work* of the hunter was to follow this track. If the hunter lost the track he lost his chance of capturing the animal in its lair, or on its feeding ground. Following to the commercial branch. A chain is no stronger than its weakest link. Hence, a blacksmith makes a chain and if the chain is

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to be valuable each link must be equally strong. Following the same law to the financial branch, the guard must guard all the property placed under his care and the messenger must deliver all messages entrusted to his keeping, otherwise their services are valueless. Following the same law to the intellectual branch, the bookkeeper must place every figure in its proper place and count every figure according to its exact value, otherwise his work is valueless.

Following the Economic Table through the second law, we see that the stock raiser was compelled to follow his flocks and herds. The railroad man travels back and forth, like a shuttle, the banker takes up his daily routine; and the most difficult task in teaching is to keep from getting into a mental rut.

Following the Economic Table through the

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third law, we see that no farmer ever planted two crops where the conditions were exactly the same. No Architect ever designed two buildings that were exactly alike in every detail. No financier ever made two investments where the conditions were exactly the same. No doctor or lawyer ever had two cases that were exactly alike. Each condition is different, and so widely different, that each task becomes a separate problem.

Lawyers, doctors, ministers, financiers, and architects are known as professional people. The question then arises,— what constitutes a professional person? Going back to the Economic Table, as a guide, we see that people working in the first law were compelled to train their minds so as not to miss anything. The hunter must find every track, the blacksmith must make every link equally strong, the

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bookkeeper must place every figure in its correct place and count it for its exact value.

Following the same Economic guide, we see that people working in the second law must train their minds to work in an orbit. The stock raiser was compelled to follow his herds, although they may have led him over the same territory, day after day. The railroad man travels back and forth over the same section day after day. Hence, he must train his mind to perform practically the same daily duties. Likewise the banker must train his mind in more or less of a daily routine. While, the teacher begins at certain intellectual points and advances to certain other intellectual points, during the term, and then performs practically the same duties for each succeeding term.

With the professional person, since each

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task is different, he has no previous or routine duties to assist or guide him. His only method is to follow his task step by step, as an engineer follows his grade line from the valley to the summit of the mountain. Hence, his mind must be trained accordingly. It is generally conceded that persons who write letters after their names are professional persons. In most cases letters, written after the name, signifies, that at some time the person completed a course of study at some one of the higher institutions of learning. These persons may or may not be able to follow a complicated problem step by step, hence it is necessary to define professional persons.

Professional persons are persons who use their brain to assist them in their everyday tasks. We must not jump to the conclusion that since every person has a brain and a daily

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task, that every person is professional. About one-tenth of one per cent of the people seem to use their brain to assist them in their everyday tasks, the other ninety-nine and nine-tenths per cent seem to use their brain to retard them in their every day tasks. It is the hope of the writer, that every person will honestly believe that they belong to that favored one-tenth per cent.

When man began to till the soil he met a natural condition that of the duration of time between seed time and harvest. This duration is any where from three to ten months and during this period, if the crops are to mature, the plants dare not be disturbed. Hence, the growing plants had to be protected. In peaceful times, one person could protect vast areas and, when assistance was needed, inform other persons in the immediate vicinity. For

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this service, the watchers could be paid a portion of the crop. Banding these watchers together, into an organization, would form a government and paying a portion of the crops would form taxation. Hence, the first use of governments is protection and the principal use of taxation is to support the government.

After the crops were harvested and ready for market the early farmers met with another difficulty. A. might prepare a portion of grain for market, but the grain might not actually be consumed until it reached E., F., G. or H. as the case might be. If each person through whose hands this grain passed had his own system of measuring, it would lead to endless confusion. This confusion was overcome by the government establishing a system of weights and measures to be used in conducting all commercial transactions. Hence,

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the second function of government, is regulation. From this, we can draw the conclusion that governments are necessary in order to protect and regulate the workings of civilized man.

By going back to the Economic Table, we see that it was necessary for the hunter to protect himself and he needed no regulation in dividing his game. Hence, he needed no government. "Might was right." That was the law and government of the savage.

With the semi-civilized man, it was convenient for several families to work together and divide the product of their flocks and herds. As an illustration, take a valley twenty miles long with five places of exit. Five families working together, one family at each exit, could control the entire valley. Since the exits were guarded the flocks and herds could

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roam up and down the valley. In order for the families to subsist it would be necessary to divide the product of the flocks and herds. It was not until man began to till the soil and dispose of the products of the earth, that he needed the protection and regulation of a government.

Again following the Economic Table, taking the first law through its various branches. It was shown that the hunter required no government. The blacksmith welded his chain by using the muscles of his arm or by manipulating a machine. The guard must be a government unto himself while all the governments that ever existed could not add a column of figures.

Following the second law through its various branches, the stock raiser, the railroad man, the banker and the teacher, can all be

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assisted with the aid of government. Yet, the stock raiser might be called upon to turn his herd single handed and alone, in order that they may not escape from him. The railroad man must solve many difficult problems, unaided and alone. In many cases, the banker has no one to assist him in guarding the property under his care. While, every teacher knows that any school may be a little world of its own.

The farmer needed the protection and regulation of a government when he began to till the soil. The architect, the lawyer, and the doctor needed the protection and regulation of a government when they began to charge for their services. The financier needed the protection and regulation of a government when he arranged his investments so that they yielded him an income. Hence, we can draw

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the conclusion, that civilized man needs government protection and regulation when he places professional work on a commercial basis.

As the world advances it draws farther and farther away from the law of material. That is, the material in the mine and in the forests is constantly decreasing. In order to subsist, the world must turn more and more to products gained by invention, which is mostly professional work. Hence, it is necessary to bring our daily affairs more and more under the control and regulation of the government.

As previously shown, taxation is a sum collected for the support of governments. Under existing conditions, taxation has become quite complicated. It is also closely

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allied with tariff. These two conditions will be treated separately.

As previously shown, the second function of government is to regulate. This has been accomplished by the government establishing standards. Different governments use different amounts but in principle all standards are the same. The question uppermost in the mind of every person today is: the high cost of living. Practically, the high cost of living is due to the fact that the government has outgrown its present system of weights and measures. That is, with its present system of weights and measures the government is no longer able to regulate commercial conditions.

The only form of business, that seems to promise any relief, is the commission form of business. But, before the commission form of business is possible it will be necessary for the

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government to extend our present system of weights and measures. That is, in the commission form of business everything must be bought and sold according to standards set by the National Government. It would be necessary to extend our present system of weights and measures so as to cover all fruits, nuts, vegetables, grains and meats. In the case of manufactured articles, in many cases, the manufacturer must meet conditions that it would be difficult and costly to standardize. To add to their beauty and usefulness, all manufactured goods are colored or painted. The consumer is not interested in the method of manufacture. All the consumer cares to know is, that the goods are, what the manufacturer says they are. That is, if A. is a shoe manufacturer and offers a shoe for sale that he marks as being all leather, the shoe

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must be all leather. At the same time he may be making shoes that are part paper or shoes that are canvas. If B. is a cloth manufacturer and manufacturers a piece of cloth that he marks as being all wool, the cloth must be all wool. At the same time B. may be manufacturing cloth that is part wool and part cotton or cloth that is all cotton. But, if A.'s shoes, that he has marked as being all leather, are found to be part paper, or B.'s cloth, that he has marked as being all wool, is found to be part cotton, both A. and B. are liable to government prosecution and to such punishment as the government sees fit to mete out to them.

In order that the commission form of business may be conducted successfully, all business must originate with the consumer. The consumers order from the commission man

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what they want and the commission man gets it for them. It is simply quick sales and small profits. Every merchant knows, that is his most profitable business. In the commission form of business, since it is the duty of the government to protect and regulate, it would be necessary for the government to control all places where grain or food is stored. This would mean all grain elevators and cold storage plants.

There is no denying the fact that the farmers work hard for the products that the earth gives them. But, does not the mill man work just as hard to produce machines for the farmers to use? If it is necessary for the government to protect and regulate conditions for the farmer, is it not just as necessary that the government protect and regulate conditions for the wage earner?

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CHAPTER XIII.

TAXATION.

As previously stated, taxation is a sum charged or collected for the support of government. As previously shown man's wants are luxuries, conveniences and necessities, hence, his taxes must be arranged accordingly. During prosperous times, luxuries will yield a certain amount of taxation. That is, people desire many things that are neither convenient or necessary and when they can afford it, financially, the people will purchase these articles. But, during times of depression, the use of luxuries decreases. If the depression is long and severe, the use of lux-

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uries may entirely cease, hence, all taxation from luxuries would cease. From this, we see that the first condition in taxation is:—that luxuries cannot be depended upon to yield taxation.

The conditions that are true of luxuries are likewise true of conveniences. In times of depression, people deprive themselves of many conveniences. Hence, the amounts received from the sale of conveniences decrease and the amount of taxation will likewise decrease. The second condition in taxation is:—That the amount of taxation derived from conveniences will decrease during times of depression. The conditions that are true in regard to conveniences are likewise true in regard to incomes and salaries. In times of depression, all incomes and salaries decrease and many incomes and salaries entirely cease. Hence,

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in times of depression, the amount of tax derived from incomes and salaries must likewise decrease.

The third condition in taxation is:—that during times of depression, in order to support itself, the government must depend largely or entirely upon taxation derived from necessities. In many cases, it is necessary to determine the use of an article before it is possible to determine whether it is a luxury, a convenience or a necessity. The average farm horse may be a necessity, a convenience or a luxury, depending entirely upon how the horse is used. If the horse is used to drag the farm implements, in cultivating the soil, or to draw the crops to market, the horse is a necessity. If the owner wishes to go to a neighbor's house, a mile away, and rides the horse in preference to walking, the horse is a

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convenience. If the horse is hitched to a pleasure vehicle and driven for pleasure, the horse is a luxury.

Taking another illustration, A., B. and C. each owns an automobile. A. uses his automobile entirely for pleasure. B. uses his automobile to travel back and forth to his office, when he might use a street car. C. uses his automobile to take goods to his customers or material to his workmen. A.'s automobile is a luxury, B.'s automobile is a convenience, and C.'s automobile is a necessity.

Nearly all articles conform to the same conditions. Hence, we can readily see that it depends very largely upon how an article is used as to whether that article is a luxury, a convenience or a necessity. To carry the illustration of A., B. and C. a step farther. In times of depression, A. can advance many rea-

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sons why he should no longer own an automobile. His desires for automobiles may have been satisfied. His friends and associates may no longer have automobiles. The roads may have been allowed to deteriorate so that there is no longer any pleasure in driving an automobile. He could advance any number of reasons why he should not keep an automobile, but, the fact is he does not keep an automobile so the government has no chance to tax him for keeping an automobile. In the case of B., business depressions may develop many reasons why he should economize. He finds that it costs about five cents per mile to ride in an automobile and about one cent per mile to ride in a street car. He denies himself the convenience of riding in an automobile. He rides in a street car and saves the difference between the automobile

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fare and the street car fare. But, he no longer owns an automobile, so there is no longer any chance to tax him for owning an automobile. C.'s automobile is part of his business, hence, he is compelled to keep it. Consequently, the government has a chance to tax him for keeping it. Since the government is compelled to depend upon necessities for its tax or revenue, it is to the interest of the government to arrange necessities so that they will yield the largest possible amount of taxation.

If we wish to understand the principles of taxation it will be necessary to adhere closely to conditions. The earth, man and many other conditions existed before governments became necessary. Since the function of the government is to protect and regulate, logically, the government only should tax those conditions

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that require government protection and regulation.

Taxation of Mining Companies:—In their natural condition, hid in the earth, minerals require neither government protection nor government regulation. Hence, minerals should not be taxed for the support of governments. Mining companies do require the protection and regulation of governments, hence, mining companies should be taxed for the support of governments. The question then arises, how should mining companies be taxed? Minerals may be taxed by using either one of three methods. They may be taxed on an acreage basis; they may be taxed on a tonnage basis, or they may be taxed on a valuation basis. As previously shown, minerals yield no return until the time of mining. At the time of mining, the profit must be sufficient to pay all

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previous expenses. If taxed on an acreage basis, the same area may be taxed year after year but since the mineral can yield no return until the time of mining, the tax must simply accumulate. That is, taxing on an acreage basis, is simply creating a debt that future generations must pay. If the time of mining is far distant, the accumulated debt, that must be obliterated by a profit at the time of mining, may be so great that the minerals cannot be used for commercial purposes. If the companies are taxed on a tonnage or valuation basis there is no tax due until the mineral is mined. At the time of mining, a certain sum is charged for taxation which in reality becomes a part of the cost of production. All the facts point to the logical conclusion, that mining companies should be taxed on a tonnage or valuation basis and not on an acreage basis.

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Valuation of Property:—The valuation of property can always be determined, either from what the property will produce, from what the property will yield, or from what the property will earn. The produce or earning power of the property can be converted into cash. After deducting all necessary expenses, the balance represents the interest on the valuation. There is an exception to this in the case of mineral lands. This exception has been previously explained.

OWNERSHIP.

Economically, we must recognize two classes of ownership; absolute ownership and conditional ownership. The merchant buys and sells but he buys and sells absolutely. That is, when a merchant buys goods, the goods belong to him and he may do absolutely as he

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pleases with them. He may sell them, he may give them away, he may consume them, or, he may destroy them. No person has any right to question the disposition that he makes of his own goods. The real estate man buys and sells property, but he always buys and sells conditionally. That is, all property is bought and sold subject to taxation and taxation is imposed on all property for the support of the government. Thus, for the purpose of taxation, the government must know the valuation of all property.

Different governments have used different methods to determine the valuation of property. One method is for government officials to place valuations on all property for the purpose of taxation. This is neither a small nor a pleasant task, as property owners are continually appealing to the courts for adjust-

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ment of valuation. The method has likewise brought abandoned farms in the country and slums in the cities.

In the country, land is used to produce farm products while in the cities it is used as sites for buildings. This necessitates using different methods in placing valuations on country property and city property. Economically, in the country, the land must be valued in proportion to what it will produce, or what it can be made to produce. In the city the land must be valued in proportion to what it will earn or what it can be made to earn. Since the government values land for taxation purposes, economically, it is to the interest of the government to make country land produce as much as possible, and to make the city land earn as much as possible.

There is but one answer to the cause of

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abandoned farms in the country and slums in the cities, that is, excessive taxation. It is known to country people, that hill land and mountain land will not produce as large crops, using an equivalent amount of labor, as river bottoms will produce. Another fact that is not so generally known is:— that land in some geological formations will not produce as much as land in other geological formations, other conditions and locations being similar. If land is taxed for more than it will produce, it is taxed excessively and the farmer must abandon the farm either by moving to another locality or by entering other lines of employment. That is, if it takes all the farmer can raise to pay the taxes on the farm there is nothing left to compensate the farmer for his labor.

Slums in cities are the result of growth, or

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rather the lack of growth. At some period, in the history of the city, the slum district was the leading part of the city. But, this may have been when the city was merely a country village. Other parts of the city grew, but the slums remained stationary. In many cases, the properties pass from one generation to another generation by inheritance. The income from the property is all the people who own the property have to live upon. A half loaf is better than no bread and the income from a delapidated property is better than no income.

Since the government values land for taxation purposes, it makes no difference to the government who owns the land or who pays the tax ; as long as the land is yielding or earning all that it can be made to earn ; thus, yielding the greatest amount of taxation.

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Since the government is interested only in taxation and not in valuation, some governments have adopted a different method for determining the valuation of property. Instead of government officials determining the value of properties, each property owner determines the value of his own property. The government stipulates that he must sell the property, for cash, at the valuation given providing any person wishes to buy the property. This system will permit of different developments. If the property is sold, at the stated valuation, it simply means a transfer of ownership and the government has gained nothing in the way of taxation. But, if the transfer were made at valuation given plus ten per cent and the taxation determined on the new valuation, then the government would have cause to insist on the transfer.

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In the rural districts, this method would tend to keep land of inferior fertility under cultivation, for the land would be taxed according to its producing value. In the cities, the method would tend to eliminate the slums. As previously stated, slums in cities are formed by a lot of buildings that have outlived their usefulness. In nearly every case, the buildings are owned by people who have not the means, financially, to replace the present buildings with buildings suitable to meet present requirements. In addition, the slums are usually situated in the most valuable part of the city.

There is no reason why valuable city property cannot be owned and controlled by corporations the same as other property is owned and controlled by corporations. In many slum districts, it might be necessary to combine

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several properties before a plot, large enough to meet the requirements, could be secured. Taking the valuation of these properties from the government records, suitable buildings could be arranged to make the slum district the most valuable part of the city. The present owners could be paid in cash or given securities in the enterprise.

Tariff:—A tariff may be considered as a financial wall, or dam, thrown around a country to protect its industries, during a certain stage of national development. Since it was necessary for primitive man to live from the products of the earth, probably the first class of people to need government protection and regulation were the farmers. The farmer needs many articles that he cannot produce and his only method, is either to buy or exchange for these articles. If he buys, he must

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likewise sell, otherwise he has no money to pay his bills. If he simply exchanges, he has no money to pay his taxes. The workings of a nation are similar to the workings of an individual except that they are conducted on a much larger scale. In the early stages of its development a nation does exchange for many articles that it cannot produce but it must be able to secure a certain amount of cash in order to meet its financial obligations.

During the early stages of its development, every nation has been compelled to borrow money from outside sources. If it simply exchanged articles the interest on borrowed capital was a constant drain on the finances of the country.

Closely allied with the finances of the country are, the manufacturing interests. The home manufacturer was compelled to have

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plant and material before he could manufacture. These articles were invariably procured by means of borrowed capital. The home manufacturer might be able to meet the foreign manufacturer on an exchange basis. But, it was necessary for the home manufacturer to sell a certain amount, for cash, in order to be able to meet the interest on his borrowed capital. Otherwise, the interest on his borrowed capital would drive him out of business.

What the home manufacturer needed was a condition that would allow him to sell his manufactured articles, in his own markets, for less than the foreign manufacturer could sell similar articles and at the same time allow the home manufacturer sufficient profit so that he could pay the interest on his borrowed capital. This condition was brought about by the government establishing a protective tariff.

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Literally, the government said to the foreign manufacturer, that if he wanted to trade in these markets it would be necessary for him to pay the government a certain sum for the privilege. This sum was turned into the national treasury.

At this point it will be necessary for us to balance our books. Interest on outstanding loans is against the country. But, the country is using its own manufactured articles to develop its own resources, and selling food products. The one condition practically balances the other condition. A country can develop, by means of a tariff, so long as these conditions prevail. But, as soon as a nation becomes a lender instead of a borrower or consumes all its food products then a tariff becomes a detriment instead of a benefit.

If a nation lends more than she borrows the

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amount of interest she receives is greater than the amount of interest she pays. Consequently the nation has an income from the interest on her loans. At the same time if she sells manufactured products and food supplies the nation is in a position to dictate her own prices, hence, a tariff can no longer protect.

On the other hand, if a nation must pay interest on outstanding loans and buy food supplies she is compelled to sell manufactured articles or become bankrupt. A tariff will increase the price of her manufactured articles and likewise increase the cost of her food supplies. Increase in the cost of manufactured articles decreases the sales and increase in the cost of food products is a direct increase in expenditures. Hence, a tariff becomes a detriment.

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CHAPTER XIV.

WAGE EARNERS.

The world has produced three classes of workmen; the freeman; the servant; and the slave. The freeman controls his own business affairs and is compensated by the direct returns of his business. The servant receives a salary and in return for the salary allows his services to be controlled by other persons. The services of the slave were legally controlled by other persons. That is, slavery, as it existed, was nothing more than one class of persons legally controlling another class of persons. For many years, slavery has been abolished by all civilized nations, so that today we have but two classes of workmen.

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The freeman is allowed to control his own business, but his compensation varies. As an illustration, "A" begins business on January first, with a capital of One Hundred Dollars, and remains in business for one year. At the end of the year, he is in either one of three conditions. He has more capital than he had when he began; he has as much capital as when he began; or, he has less capital than he had when he began. In the first condition, suppose at the end of the year, he has One Hundred and Fifty Dollars. Fifty Dollars represents the pay for his work. In the second condition, he has but One Hundred Dollars; hence, he has worked for nothing. In the third condition, suppose he has Fifty Dollars; he has not only worked for nothing, but he paid Fifty Dollars for the privilege of working.

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Before power was applied to manufacturing, nearly all business was conducted by this method. Today, many small transactions are conducted according to the same principle. This method produced the condition of master and servant, and gave rise to the apprenticeship system. In the apprenticeship system, the apprentice was to serve for a certain period of time. At the end of that time, he was supposed to be a master workman. History proves that the system did produce many good workmen.

When power was applied to manufacturing and corporations were formed, a new condition developed. It was found advisable to pay all corporation employees a salary. By using this arrangement, the condition of master and servant disappeared and the new condition of servant dealing with servant developed.

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THE INSTRUCTION OF WORKMEN.

In the case of master and apprentice, the master was the instructor. In the case of corporations, if each employee is allowed to develop his own method in his own way, it will lead to endless confusion and very little actual work. If the world is to advance, it must begin in the morning where it left off the night before. This would imply continual instruction on the part of the younger workmen. Since there is no one else to furnish this instruction it will be necessary for the corporation to furnish it. It might add to the usefulness of the method, if the younger workmen were charged something for instructions.

The Protection of Workmen:—In the training of large bodies of men, the old time apprenticeship system has proven itself to be defective. Conditions have arisen where all

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interests concerned need government protection and government regulation.

In order to perform the tasks required of them, some employees must be given legal powers that are denied to other employees. The duties of the foreman is to direct the work. In order to properly direct the work, he must be able to control the working forces. The using of brute force, in controlling workmen, is a condition of the past. The foreman is a part of the corporation and the corporation is a part of the government. Hence, if the foreman needs assistance, the logical place for obtaining this assistance is from the government. From this we see, that since it is necessary for the foreman to invoke the aid of the government it is likewise the duty of the government to provide the foreman with a legal method of discharge.

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The mails and the telegraph are extensively used in many business transactions. This places many business affairs into the hands of disinterested people. Not saying that these people are careless, negligent, or incompetent, but merely that they are disinterested. The address is wrong on an important letter or a missent telegram leads to complications. Invariably these complications first manifest themselves among the working force. The workmen get blamed and in many cases discharged. In order to protect the workmen from injustice, it is likewise necessary for the government to provide the workman with a legal right to a hearing. After all interested parties have had a legal hearing, if it is shown that the workman is incompetent, either physically, commercially or intellectually, to perform the tasks required of him, it is to the in-

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terests of all parties concerned that he should be removed. But, if the workman is thoroughly competent to perform his tasks and is simply the victim of some other person's blunder, then the government must place the blunder where it belongs.

The Promotion of Workmen:—All labor seems to divide itself into three general classes. The total product is the combined product of many workmen. The work required, becomes part of a system; or, the single article is the combined efforts of many workmen. The work of the different corporations practically follows along these lines.

The work of the mining companies, practically, follows the first condition. A car of coal is the product of many workmen. The work of railroad men, practically, follows the second condition. Each workman becomes a

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part of the system. The work of the steel companies, practically, follows the third condition. A bridge or steel structure is the combined efforts of many workmen. Each workman, or class of workmen, only performed a part.

Observation shows that the work of the miner is largely physical; the work of the railroad man is largely commercial; that is, part physical and part intellectual. The work of the steel man is largely intellectual. Inferior work at any point may render the whole structure useless.

This gives another method of classifying labor, namely, physical, commercial and intellectual. This classification permits labor to be divided into third class, second class and first class. In addition, there are skilled mechanics, or workmen who perform the entire task and

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produce a complete article. These workmen might be termed master workmen. This arrangement would give four classes of workmen; namely, third class workmen; second class workmen; first class workmen; and master workmen.

PROMOTION OF OFFICIALS.

Three methods present themselves either of which may be used in promoting officials. Each method produces a different effect upon the official or operating force. These methods are:—the line organization; the staff organization; and competitive examinations. In the line organization, each official is promoted according to his position in the organization. In the staff organization, men are chosen to fill certain positions irrespective of other conditions. Both of these methods are so defec-

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tive as to be practically useless. In the line organization, sooner or later, some one will get in line who cannot advance or will not advance. The result is, that eventually the entire working force will be reduced to the intelligence of the one who will not advance. There is no method provided to get past him and the line dare not be broken.

In the Staff Organization, it immediately leads to disorganization. The whole organization becomes suspicious and disloyal for they do not know at what instant someone will be advanced over them. This leaves but one practical method, that of competitive examinations. By using competitive examinations the entire force is eligible for advancement. Working standards can be set and maintained, for every person proved that he is capable of performing the required duties

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before he was eligible for appointment. In case several persons become eligible for the same position at the same time, it might be found necessary to choose one of the number by lot.

Compensation of Workmen:—The conditions of rents, taxes, wages and cost of produce, or living expenses, are so related that to change one will automatically change the other. As previously explained, it is the working of the peculiar mathematical condition where the quantities vary and the ratio varies. This condition cannot be figured satisfactorily by using the ordinary rules of arithmetic.

Using the ordinary rules of arithmetic, high wages and high cost of living are better for the wage earner, than low wages and low cost of living. As an illustration—"A" receives a salary of Twenty-five Dollars per week and

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his living expenses are Twenty Dollars per week. By this arrangement he saves Five Dollars per week. Double his salary and double his living expenses and he saves Ten Dollars per week. Cut his salary in half and his living expenses in half, and he saves but Two Dollars and fifty Cents per week.

The manufacturer, or employer of labor, is compelled to operate along the line of greatest profit. The higher the wages, the lower the line of profit, until the manufacturer reaches the point where it is more profitable for him to sell the raw material and employ no labor for manufacturing. Hence, high wages tend to produce goods of inferior quality. As an illustration, "A" is a manufacturer and can sell an article for ten dollars. By doing an additional amount of work the value of the article can be increased to fourteen dol-

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lars. But, this additional work costs five dollars. Hence, it is more profitable for "A" to sell his article for ten dollars than it is to do the extra work and sell the article for fourteen dollars.

As previously explained, the workman produces wealth, but is paid in capital. Hence, the workman is constantly subjected to the fluctuations in the value of capital or the change in prices.

These fluctuations can be regulated by means of a constant wage. As previously explained, an able bodied man working on a plot of ground for a period of ten hours, and devoting his energies to the cultivation of wheat, will produce one and three-fourths bushels. One and three-fourths bushels of wheat, or its cash equivalent, then becomes our standard of value for ten hours of unskilled labor.

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All other labor can, then, be regulated in terms of unskilled labor.

The freight on one bushel of wheat from the northwestern part of the United States or the southwestern part of Canada to Liverpool, England, is less than one cent per bushel. Such being the condition, it might be possible to establish a uniform rate for the entire country. At present, we lack experimental data, but assuming that the rate is uniform for the entire country.

Using this method, it will be necessary for the government to set, or establish the price of wheat at certain stated periods. If it is necessary to increase the price of wheat, rents, taxes, freight rates, wages and all forms of produce increase in proportion to the increase in the price of wheat. If it is necessary to decrease the price of wheat, then rents, taxes,

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freight rates, wages and all forms of produce decrease in proportion to the price of wheat. That is, all values increase or decrease, in equal proportions. The only permanent condition being that ten hours of unskilled labor is always worth one and three-fourths bushels of wheat or its cash equivalent.

National Employment Bureaus:—In some ages of the world, a man who was out of employment, or constantly getting out of employment, was considered as being defective. Under modern conditions, that consideration is no longer true. In all lines of construction work, first class men may get out of employment, at any time, and nearly all farmers need additional help during the harvest season. The difficulty seems to be in getting the right man and the right job together.

The wheat pit acts as a clearing house for

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the farmer. The board of trade acts as a clearing house for the manufacturer. The stock exchange acts as a clearing house for the financier, and the university acts as a clearing house for the intellectual man. The working man has no clearing house for his labor. The working man must spend valuable time in searching for employment; and the employer of labor must spend valuable time in searching for help.

An economical arrangement to solve this difficulty is a national employment bureau. This would act as a clearing house for labor.

Several conditions arise in connection with the operation of a national employment bureau. All work must be standardized, and it would be necessary for the bureau to establish and maintain its own system of standards. The bureau, being responsible to both the em-

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ployer and the employee, must be familiar with local conditions.

Environments or surroundings will constantly need to be considered. Not only must the workman be *capable* of performing the tasks required of him, but he must also be *able* to perform the tasks required of him. As an illustration, men who work underground are very susceptible to climatic changes. In the winter time, the weather is too cold, and in the summer time the weather is too hot for these men to work in the open air. Even though they know how to perform the tasks required of them, mill men and office men are of little value to the farmer, during harvest time. They are unable to withstand the effects of the sun. Economically, if a national employment bureau is properly conducted it will save much valuable time for all parties

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concerned. In order not to be a burden to the tax payers, those using the bureau would be charged a fee sufficient to make the bureau self sustaining.

CHAPTER XV.

INSURANCE.

As previously explained, in all transactions there is a certain amount of risk that cannot be avoided. This risk has been eliminated, to a certain extent, by means of insurance. Literally, insurance is helping to bear each others burdens. The farmer must continually risk his crops against storm, drought, and frost. Annually the losses, or supposed losses from these sources, amount to hundreds of millions of dollars. So regular are the occurrences and so severe the losses, that no method has ever been evolved to compensate the farmer for these losses, by means of insurance. In the risk of storms, drought and frost, each farmer bears his own individual loss.

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Calling the amount paid for insurance the rate, in the case of storms, drought, or frost, the rate would necessarily be so high that insurance would not be profitable. Practically, insurance has narrowed itself into three classes. Fire Insurance, Accident Insurance, and Life Insurance.

In fire insurance, different methods have been evolved. In some communities, the people band together for mutual protection. In such a case no rates are charged, but in case of a fire, each member of the company, is assessed a certain amount. Another method is to form stock companies, where certain rates are paid and no assessment charges are made. In cities and towns where paid fire companies are maintained, generally, the property owners pay two rates for fire protection. They pay one rate, to the insurance company, for insur-

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ance, and they pay another rate, in the form of tax, to support the fire company.

The rate of insurance will vary in accordance with the material of which a building is constructed; the location of the building; and the use of the building. Usually the rate of insurance is higher for buildings constructed of timber than it is for buildings constructed of steel, stone or brick. The rate of insurance will be higher where frame buildings are built so closely together that a fire in one building may be communicated to other buildings, than it would be if each building were isolated. In regard to the uses of buildings; mills and factories usually pay a higher rate of insurance than is charged for dwellings.

Accident Insurance:—Accident Insurance has expanded until it embraces shipments of goods, either by railroad or ocean; packages

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sent by mail; as well as injury to persons. Since very few of the articles insured are injured or destroyed, the rate of insurance can be made very low. Yet, the total amount collected must be sufficient to pay all damages or injury.

Life Insurance:—Life Insurance is an agreement between an individual and a corporation. The individual agrees to pay the corporation a certain sum annually. In return, for this payment, the corporation agrees to pay a certain specified sum, to some person specified in the agreement, provided the person who is insured dies before a time specified in the agreement.

In Life Insurance there are two general methods used. One method is to pay a certain sum annually, so long as the insured person lives. The other method is to pay a

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certain sum, annually, for a specified number of years. At the end of which time, a settlement is made, provided the person insured does not die in the meantime.

In case the person insured dies before the time specified in the agreement, then the entire settlement is made at the time of death.

The Advantage and Disadvantage of Insurance:—Insurance is always a sum paid for an uncertainty. Buildings may stand until they fall from decay, and be insured for the entire time. On the other hand, buildings may scarcely be completed before they are destroyed by fire. In this case, the insurance, on the buildings that have stood for many years, helps to pay for the total loss on the new buildings. Likewise, in the transportation of freight, the insurance on freight that arrives safely at its destination, helps to pay

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for freight that is accidentally lost or damaged. Accidents to persons usually render them unfit to follow their usual occupations, so that insurance may be the means of alleviating much suffering.

The advantages derived from life insurance are somewhat different. Primarily the advantage of life insurance is to meet a financial condition where if everything goes right, everything will end right. But, if the person interested should die in the meantime, innocent people would be made to suffer. That is, by insuring their lives, students may safely borrow money to complete their education; money may be borrowed for business purposes; or marriage relations entered into.

The foregoing are the advantages of insurance, but there are likewise disadvantages of insurance. A building may catch fire and

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burn from a perfectly natural cause, but the owner must be able to prove clearly what this cause was. If he is unable to do so, in addition to forfeiting his insurance, he may have to stand trial, in court, on either of two charges. He may be charged with setting his building on fire, or he may be charged with criminal negligence. Either is a penitentiary offence.

In the case of freight or merchandise, it may be charged that the freight was insured for more than it was worth and then wilfully destroyed in order to obtain the insurance.

Accident insurance, in regard to humanity, divides into two parts—persons insuring themselves and workmen insured by corporations. A person may insure himself against accident. The worst charges that can be brought against him is that he wilfully injured

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himself or allowed himself to become injured. When corporations insure workmen, a different condition arises. Since the corporation pays the insurance it is an additional amount added to the cost of production; hence an added burden to the consumer. Insurance may likewise breed a false sense of security in the workmen and make them careless or negligent.

In life insurance, if a person insures his own life and cause of death cannot be clearly proven, the worst charge that can be made against him is suicide. With some companies, a charge of suicide is sufficient to invalidate the insurance. If one person insures another person's life, the case may be different. As an illustration, a parent insures a child's life and the child dies in a mysterious manner but from perfectly natural causes. While the parent is

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perfectly innocent of any crime, the parent may be compelled to stand trial for murder. If convicted, the parent may be compelled to pay the penalty for murder.

We see that a person who is dealing with insurance needs to be careful. Then the disadvantages of insurance may be avoided. When insurance is properly conducted, the advantages far outweigh the disadvantages. The many who are not injured, help to compensate the one who is injured, knowing that in case of injury they will receive like compensation.

CHAPTER XVI.

SCIENTIFIC MANAGEMENT.

There may be more pathos than poetry in the old song, "Tomorrow will be Friday and we caught no fish today". There is little need for management in the humble lives of the fisher folks. Yet, no fish might mean no food and no food might mean starvation. The fisher folks have to conform their lives to the elements and conditions that surround them. There is little chance for them to arrange the elements to suit their lives.

In times past, men forsook the humble toil of the fisherman and engaged in other forms of occupation. As the world advanced, what is known as scientific work appeared and later

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came scientific management. Perhaps the ancient prophets, when they foretold the future, were simply scientific men using scientific methods. Today if a person told you that in our Northern clime, it would be hot in July and cold in January and that in the Southern hemisphere, the people would be harvesting on Christmas and going sleighing on the Fourth of July, we would not call him a prophet. If we called him other than well informed, we would say that he is a scientist.

The scientist then determines conditions and events by means of certain laws. Laws always mean order. Hence, Science must be order and scientific management must be orderly management. So long as each person worked by themselves and for themselves, there was little need for management. As the size of the task and the number of people required to

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perform the task increased, management became an important factor. When machinery was introduced, management became the absorbing question.

To try to regulate the actions of workmen by means of a stop watch until the workmen fall from exhaustion is not scientific management. That is simply brute force worse and more of it. Yet science can be used in management with profitable results. Beginning with mining companies, they must accept their material as they find it. There is no chance for any kind of management from that source. According to Biblical traditions, the ancients found trouble when they attempted to build a Tower of Babel on the Plains of Shinar. Is it any wonder that the moderns find trouble when they attempt to build a tower of Babel under the ground?

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Everyone, who knows anything about underground work, knows that a mine is a trap. The safety of one person may mean the safety of all. If men cannot understand each other and cannot understand the orders given them, how are they to protect their own lives much less the lives of their fellow workmen? Probably the first step, in scientific management for underground work, would be a uniform language for underground workers. This would not necessarily mean the invention of a new language. Probably a law, compelling all workmen entering any given mine to be able to speak and understand the same language, would do all that is necessary.

Since the invention of railroads the railroads have been struggling with a scientific condition that still causes trouble. The manufacturer, or producer, must ship his goods to

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the receiver, or consumer, wherever that person may chance to live. From the same source, and at the same time, a railroad may receive freight for Northern, Southern, Eastern and Western points. The student has learned from books and the railroad man has learned from experience, that two bodies cannot occupy the same space at the same time. Since all the railroads must constantly receive freight, as previously stated, the question that is constantly facing the railroad man is; how to arrange that freight in an orderly or scientific manner. The railroads have tried to solve this problem by using the hump track at the receiving yards. The hump track has not proven satisfactory. In the first place, the hump track is only a partial solution of the difficulty. In the second place, the hump track is hard on rolling stock. The difficulty

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can be met satisfactorily by two parallel tracks connecting at frequent intervals with crossovers. These tracks should be, at least, long enough to accommodate a long train. In operation a mixed train is run on one track and an engine on the parallel track can be used to pick out of the mixed train cars that are wanted. In this manner trains can be arranged in an orderly or scientific manner. Thus far we have seen that the mining man has no choice in the matter, and the railroad man is confined to such close limits that somehow he must solve the difficulties.

Probably scientific management yields its largest returns to the manufacturer. The manufacturer always works in the Economic Law of Production or the Economic Law of Increasing Returns. This gives him a greater chance to arrange or disarrange the elements

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that enter into his manufacturing projects. Referring to our previous classification of labor, we see that as far as the products are concerned, the work of the mining man is entirely physical. That is, he must take the product as he finds it. The work of the railroad man is largely physical and intellectual. In intellectual work, the operating railroad man is confined to very close limits.

The work of the manufacturer not only embraces physical and commercial work, but it also embraces a more or less amount of intellectual work. Very often the results of all his labor depend upon the intellectual work. Not being able to have this intellectual work done, in a proper manner, often places the manufacturer in a very embarrassing, if not a serious position.

Different conditions of labor have developed

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different organs of the body. The hunter developed the eye and the ear. The commercial man developed the muscles of the body. Scientific work and inventions have developed the brain. In order to reach its present stage of civilization, the world has developed several classes of workers. Not only do we have farmers, mechanics, skilled and unskilled labor, but as previously explained, we also have professional persons.

The manufacturer and contractor must not only meet physical and commercial conditions, but many times they must meet intellectual conditions. In intellectual work, what the manufacturer and contractor want are facts. The question is—how are they to obtain these facts? Intellectual work can only be measured by results and results can never be obtained until the work is completed. If a man

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ruins an engine for a contractor, the contractor knows that the man is incompetent to handle the engine, but that does not repair the engine. If a man designs a sewer system for a town and it will not work, everyone in town may know it, but that does not reimburse the injured tax payers.

Many of these conditions can be traced back to our school system. While we spend millions of dollars annually in educational work, we lack a national educational system. Practically each teacher uses their own methods and each school district is a unit by itself. The fundamental principles of education are the same, the country over, yet, we lack in uniform methods of instruction. As previously shown, the child needs to be instructed physically, commercially, financially and intellectually. In some cases the child is examined

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physically by a physical director or physician. The remainder of our educational system is simply shooting in the dark. Children are started on certain lines of intellectual work, but no examination is ever made to determine whether or not the child is able or capable of understanding what is being taught. Nervousness and diseases of the mind abound, yet no examinations are made with a view to assisting the child in its development.

Experience has shown, that money expended for educational work is a very good investment. Experience has likewise shown, that seed sown in the soil is a good investment; yet, every farmer knows that before the seed is sown, the soil must be prepared. If money spent for educational work is a good investment when the work is done in a haphazard manner, would it not be a much better

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investment if the work were done in a scientific manner?

It is known, that skilled physicians can read the mind with as much precision as they can read the muscles of the body. Such being the case, is it not a good investment to have all school children examined at least once a year by a competent physician? This examination to embrace not only the physical, but also the commercial, financial and intellectual part of the child. If the records are kept, many childhood defects could be detected and probably eradicated before the child reached manhood or womanhood. In professional work, this condition opens a large field for women. A woman can understand diseases and conditions peculiar to children in a way no man understands these conditions.

Among sailors and sea-faring people, a pilot

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is a person who guides a ship through a tortuous channel. A wrecker is a person who takes charge of a ship after it has stuck fast. In their professional life, lawyers very often must arrange their work to suit the interests of their employer. Very often the services of a lawyer are not required until his employer has a bad legal wreck of some kind on his hands. In such cases do conditions permit the lawyer to use his professional talents in their highest capacity? If the employer will permit, is not the lawyer who can guide his employers' interests, in such a manner as to keep them out of the meshes of the law, performing a greater service than the lawyer, who is simply called upon to try and extract his employers' interests from legal entanglements?

The professor has his students. The en-

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gineer has his problems. The doctor has his patients, and the lawyer has his clients. These men are all chained to the wheel by details that they dare not neglect. Yet, the world still needs a class of people who can travel for a field intellectually, make accurate observations and draw correct conclusions. In order to accomplish this task, the person must have a certain amount of leisure time. With the training that they have received, the ministers could perform this work. They could secure their leisure time by exchanging pulpits with each other.

CHAPTER XVII.

PANICS, STRIKES AND WARS.

Panics:—It has been quite definitely proven that money bears about the same relation to industry that blood bears to the body or that sap bears to the plant. Any condition that will retard or stop the circulation of blood will injure or destroy the body and any condition that will retard or stop the flow of sap will injure or destroy the plant. In the same way, any condition that will injure or destroy the circulation of money will create a panic.

If we turn to nature we find that she has three ways of injuring or destroying her products. Nature may injure or destroy her

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products either by storm, by drought or by frost. In the case of storm the injury is sudden and may be so great as to destroy the plant or so slight as not to permanently injure it. In the case of drought, the process is long and drawn out. If the plant is young, a drought of short duration may seriously injure it, while if the plant is nearing maturity a severe drought of long duration may not seriously injure it. The case of frost always denotes the point of transformation, where growth may be checked or stopped entirely. In the case of young plants, a very light frost may create serious damage while plants that have reached maturity may stand a severe freeze without injury.

As the industries follow the laws of growth, conditions affect the industries as much as storms, drought and frost affect the plants.

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The conditions may only affect a single industry; they may affect a group of industries; or they may affect all the industries. Single industries will all submit to this general classification; the construction; the operation; and the returns. Sudden inventions or discoveries very often affect the industrial world like rainbows in the heavens. Industrial plants are located, apparently, so as to try to capture the pot of gold, at the end of the rainbow. If the article, to be manufactured, is some household or personal affair, the plant may operate successfully until the market or demand for the product is supplied and then as there is no market, or demand, for the product, the plant becomes idle and in many cases valueless. Hence, one of the causes of panics is destruction of markets. In single plants there are a number of conditions that often times

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create difficulty, but since they only affect a single plant they could scarcely be termed panics. Fires, floods or storms may prove expensive, but logically they would be accidents and could scarcely be termed as panics.

Groups of industries sometimes occur with a leading industry upon which the others depend. Very often this leading industry is a railroad that has been built into a new territory. Industries spring up along the railroad, but there is not sufficient traffic to support the railroad. Consequently the railroad goes down and drags the other industries down with it. Hence, another cause of panics is over-investment.

If all industries are affected, the panic becomes general and must be caused by some general condition. In that case the condition causing the panic must be either a created or

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a natural one. The condition causing the panic may be adverse or severe legislation causing a distrust in the government. Or a general panic may be caused by natural causes. If for any reason, large bodies of men are so employed that they are not producing, sooner or later all the money will accumulate in the hands of those who are producing. Usually, this class of producers are the farmers. Naturally, a panic will ensue until conditions again adjust themselves, on a more balanced basis.

Panics may be slight or severe, depending upon the conditions that cause them. If the panic only affects a single plant or industry that has no market, the plant may be so arranged that a new product can be produced, for which there is a market. In that case the panic will soon disappear.

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A railroad, opening up a new territory, offers inducements for people to settle in that territory. As the population increases the amount of traffic for the railroad increases and other business can increase in proportion, thus causing the panic to disappear.

A severe panic of short duration may be caused by adverse legislation; usually when the legislation is adjusted the panic disappears. The severest of all panics are those created by natural causes. When natural causes are involved, conditions have to readjust themselves.

Very often this readjustment has to take place along entirely new lines and may cause widespread and serious disaster for a long period of time.

Strikes:—A strike is a severing of working relations between a corporation and its em-

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ployees. The cause of strikes is a sociological and not an economic condition. About the only economic condition, that needs to be considered in regard to strikes is:— during a strike, who are the losers? As an illustration, we will use a street car strike. There are three elements that need to be considered. The traveling public, the operating company, and the employees. Under normal conditions these three elements combine and the public has service, the company has an income and the employees have work or labor.

During a strike these three elements separate into three separate units or conditions. The traveling public is one unit or condition ; the operating company is another unit or condition ; while the employees form a third unit or condition. During a strike, the traveling public is subjected to inconveniences and these

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inconveniences are expensive. But, to compensate for this loss, there is a daily saving of the entire street car fare. That is, if the street cars do not run the public have no chance to ride on the street cars and do not need to pay street car fare. Hence, with the public, the gains and losses are about equal.

The operating company loses its income, but it saves its operating expenses. That is, when the employees are on strike they receive no pay; but, the equipment of the company is lying idle. Hence, barring violence or destruction of property, about all the company loses, during a strike, is the interest on the cost of its equipment.

The employees are dealing with the element of time, and the wheels of time move forward but never backward. Hence, time once lost can never be recovered. If by striking, the

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employees gain an increase in pay, eventually they may regain their losses. As an illustration, the employees are receiving two dollars per day and by striking their pay is increased to two dollars and ten cents per day. Then the employees must regain their lost time at the rate of ten cents per day. That is, if the employees had continued at work, every day they would have received two dollars. During the days they strike, they receive no pay except the increase in pay at the end of the strike. Hence, the strikers pay, per day, is the increase in the daily wage divided into the former daily wage. In the conditions stated, for every day the employee strikes he must work twenty days to recover his losses. If he receives no increase in pay his losses are permanent.

In character, all strikes are similar to the

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illustration given. In the case of mines or fuel supplies, some distant city or steamship company may be the purchaser. If the mine is the main industry in the community, since the mine is deprived of its income all business in the community must suffer. Since a strike deals directly with the finances of a community, a strike of long duration will always disarrange business conditions.

Wars:—War is a condition from which the inhabitants of the earth have never yet been able to escape. With the savage, war was a constant condition. The true savage obtained his food from such stores as nature provided. To deprive him of food was to deprive him of life. Hence, each savage was the natural enemy of every other savage. With the savage, war had but one serious stage, that was during its existence. If any prep-

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aration was made the preparation was made in an instant. The savage knew nothing of repairing the damage done by war or a reconstruction period. Might was right, that was the law and government of the savage. The savage was a child of nature, he knew no sense of ownership consequently he knew no theft.

The semi-civilized man, when he domesticated the animals, not only increased the causes of war but he also increased the effect of war. While the savage knew no sense of ownership, the semi-civilized man established a sense of ownership, consequently he knew the meaning of theft. One of the principal causes of war, among semi-civilized people, was the stealing of each others herds. War, now had two serious conditions. First, the disasters or calamities that might happen while

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the war lasted; second, the reconstruction period. War would scatter his flocks and herds but if successful, in war, he might again be able to regain his flocks and herds. If unsuccessful in war, he was compelled to gain other flocks and herds, seek other means of obtaining a livelihood, or perish.

When man established a government to protect and regulate affairs, the causes for war were greatly increased and the effect of war was again increased.

To the civilized man, war has three serious periods or stages. The period preceding the war; the period during the war and the period following the war, or the reconstruction period. History shows that generally, the causes of war are long standing and eventually war ensues.

Actual war develops several conditions that

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need to be considered. First, is the actual loss of property and human life. While that loss is serious, logically, it seems to fall more heavily upon the conditions that existed previous to the war and tends more thoroughly to blot out those conditions. Another condition that war implies is the changed relations of the working forces. Armies are consumers but not producers. Another condition produced by war is the shifting of the financial relations. Wars always have necessitated the borrowing of large sums of money. At the end of the war, generally, this money is all in the hands of the producers and the principle producers, during every war, are the farmers.

The war being over, the next step is the reconstruction period. The first step, in the reconstruction period, is to throw all the

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armies out of employment. The discharging of the armies, likewise destroys the markets that were used to supply these armies. The destruction of markets entails a stagnation in financial affairs and stagnations, in financial affairs, are the cause of panics. Hence, it follows, as a logical conclusion, that the first thing, to be expected, after the end of a war, is a panic. Another condition, to be expected, is the repudiation of debts. A conquered or defeated nation bears about the same relation to nations that a dead person bears to society. When a man dies and leaves debts, if he leaves sufficient property, the debts are paid. If he leaves no property there is nothing with which to pay the debts. The same conditions seem to exist between nations. When a nation passes out of existence, generally, there is nothing left with which to pay its debts.

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Another condition, that the Reconstruction Period develops, is the changed relations that the war causes between the working forces. During the Forties and Fifties, the Southern Planters, undoubtedly, would have laughed you to scorn, if you had told them that pine trees would yet grow in their cotton fields. Under the condition of Slavery, as it existed in the Southern part of the United States previous to 1860, the country could produce vastly more than it could consume. The general condition of labor being that the slave performed the physical part of the labor and the master performed the intellectual part of the labor. When war severed this relation of labor and the master and the slave each managed his own affairs, the production of the country diminished. The slave, unassisted by the intelligence of the master, was not intelligent enough to manage the plantations and

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the master, without the assistance of the slave, was not, physically, strong enough to perform the labor required.

Observation shows that wars may be the gasps of a dying nation or they may be the pangs of birth of a new nation. History shows that when nations are born they bear much the same relation to nations that an infant bears to humanity. They may become strong and powerful, but it takes time to develop them. A mill cannot be run with the water that is passed, neither can a nation be rebuilt with the property and lives destroyed during a war. In the Reconstruction Period, new forces must be set to work, new material acquired. Very often these new forces and new materials must grow from old conditions, so that in Reconstruction we may expect a slow tedious process.

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CHAPTER XVIII.

CONCLUSION.

The workings of civilized man have set in motion the laws of nature. In our study we have seen that the laws of nature may cross each other; branch like branches of a river, or play hide and seek with each other. They may advance and recede like the waves of the ocean. They may glitter and sparkle like the rainbow or they may advance with the force and fury of the thunder cloud. In her dealings with man, nature may be as kind and as invigorating as the sunshine; as soft and gentle as the Spring rain; or as fierce and savage as the lightning that darts from the thunder cloud.

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In the law of Decreasing Returns or the Law of Material, the earth not only gives man of the fish which swim in the water; of the birds which fly through the air; of the beasts which roam over the plains; of the forests that clothe the mountains; and of the fertility of the soil; but she allows man to tear great gaps in her side and gives him of the minerals, that she hides in her bosom. In the Law of Constant Returns, or the Law of Transformation, nature will transform the energies of man into engines that fly through the air; ships that plough the seas; trains that run over the land; cities that stand on the earth; or bending orchards and fields of grain that dot the landscape. In the Law of Material, man must accept what nature gives, but nature will give until her supplies are exhausted. In the Law of Transformation, nature will give man

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what he wants, provided man pays nature's bill. Nature will transform man's energy into food for his table; clothing for his person; a home for his dear ones; vehicles for pleasure; or implements of destruction, to be used in destroying his fellow man.

When it comes to the Economic Law of Increasing Returns, or the Economic Law of Production, nature demands her pound of flesh to the last ounce. When her bill is due, it matters not to nature, whether it takes man a day or a century in which to pay it. It matters not to nature, whether the bill must be paid by unborn generations, by the babe who sleeps in the cradle; by the man in the prime of life; or by the gray haired sire who is tottering on the verge of the grave. In the Economic Law of Increasing Returns, whenever nature's bill is due, pay man must and pay he will.

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What toll nature will exact from humanity
for the warlike conditions that exist today,
only future generations will know.

THE END.

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